SEPTEMBER 25, 1954 PAGES 607 TO 662

THE LANCET

Offices: 7, ADAM STREET, ADELPHI, W.C.2
Telegrams: LANCET, RAND, LONDON Telephone: TEMPLE BAR 7228 and 7229

No. XIII OF VOL. II, 1954 LONDON, SATURDAY, SEPTEMBER 25, 1954 Pp. 112—Price 1s.
No. 6839 VOL. CCLXVII Founded 1823 PUBLISHED WEEKLY Registered as a Newspaper Annual Subscription: £2 2s.

18 OCT 1954

The *complete* answer for macrocytic anæmias

'ANAHÆMIN'

Literature and specimen packings are available on request

THE BRITISH DRUG HOUSES LTD. (Medical Department) LONDON N.1

OXFORD MEDICAL PUBLICATIONS

SEE PAGE 2

MANAGEMENT OF BURNS

Six articles prepared by a subcommittee of the BRITISH ASSOCIATION OF PLASTIC SURGEONS

Reprinted from THE LANCET *with an appendix*

These articles record the practice of surgeons who are treating burns every day and who see the good results of treatment that is carefully planned from the start. Here is their plan, fully but briefly set out.

48 pages Price 2s. 6d. (postage 4d.)

The Lancet Limited, 7, Adam-street, Adelphi, London, W.C.2

CAREERS IN MEDICINE

Edited by P. O. WILLIAMS, M.A. (Cantab.), M.B., B.Chir., M.R.C.P.

With contributions from 49 eminent medical authorities

Cr. 8vo 292 pages Price 15s. net, plus 8d. postage

This book outlines the particular qualities of mind, the type and amount of specialised training, required in each branch of the Medical Profession.

". . . it should be in the hands of everyone who has to advise medical students, and certainly should be consulted by every newly-qualified doctor."—*The Practitioner.*

Hodder & Stoughton Ltd., 20, Warwick-square, London, E.C.4

Fifth Edition

PRINCIPLES OF MEDICAL STATISTICS

By A. BRADFORD HILL, D.Sc., Ph.D.

Demy 8vo 282 + x 10s. 6d. net, plus 6d. postage

With Twenty-five Exercises and Answers

The Lancet Limited, 7, Adam-street, Adelphi, London, W.C.2

Second Edition

ABDOMINAL OPERATIONS

By RODNEY MAINGOT, F.R.C.S.
Surgeon, Royal Free Hospital

2nd Edition in one volume Pp. 1274 1051 Illustrations including 16 Colour Plates £6 6s. net

H. K. Lewis & Co. Ltd., 136, Gower-street, W.C.1

New Revised Edition

ENDOCRINE DISORDERS IN CHILDHOOD AND ADOLESCENCE

By H. S. LE MARQUAND, M.D., F.R.C.P., F. H. W. TOZER, M.B., M.R.C.P., and W. J. TINDALL, M.D.

Completely rewritten to conform with current trends in Endocrinology and based on the personal observation and treatment of patients during the last twenty years.

367 pages 90 photographic plates 32s. 6d. net

English Universities Press Ltd., Warwick-square, E.C.4

THE LAW AND ETHICS OF DENTAL PRACTICE

By R. W. DURAND, M.R.C.S., L.R.C.P.
Formerly Secretary of the Medical Protection Society
and
D. MORGAN, L.D.S. (Leeds)
Formerly Deputy Dental Secretary of the British Dental Association

Foreword by Professor R. V. BRADLAW, M.D.S. Dunelm, F.D.S., M.R.C.S. Eng.
Professor of Oral Pathology, Durham University
Director, Newcastle-upon-Tyne Dental School

Expert guidance on the many problems which confront the dentist

Demy 8vo 98 + viii Price 7s. 6d. net, plus 4d. postage

Hodder & Stoughton Ltd., 20, Warwick-square, London, E.C.4

To be published shortly:

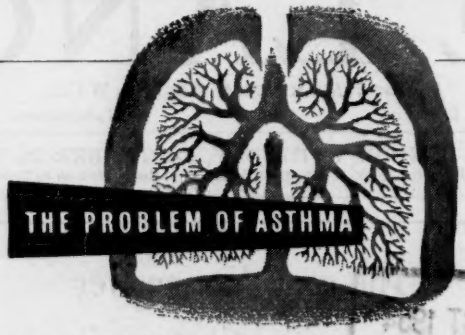
THE VISUAL FIELDS

BRODIE HUGHES

This new book, by the Professor of Neurosurgery at Birmingham University, might be described briefly as a text-book of quantitative perimetry. Its purpose is threefold: firstly, to set out the results of quantitative tests of the field of vision; secondly, to describe the disturbances of visual field arising in disorders of the intracranial visual pathways; and thirdly, to estimate the effect of different pathological processes on the visual fields in general. The last two subjects in particular have been neglected in the past; this book will, in remedying that deficiency, prove of equal interest and value to the neurologist, neurosurgeon and ophthalmologist.

About 160 pages 158 illustrations About 40s.

BLACKWELL SCIENTIFIC PUBLICATIONS · OXFORD



A search for the causative origin of asthma can indeed be a tedious one, but always the underlying factor—BRONCHOSPASM—can be treated immediately with FELSOL. Physicians in all parts of the world to which it has been introduced, have for years relied implicitly on FELSOL for the instant relief it gives in an attack of asthma, no matter what the basic cause. FELSOL acts directly on the bronchial musculature and indirectly through the vagus and sympathetic.

Rapid in action — Prolonged in effect

Full relief in perfect safety

Clinical sample and literature on request

BRITISH FELSOL COMPANY LTD., 206/212, ST. JOHN STREET, LONDON, E.C.1

... SO IS

'CO-ELORINE'
TRADE MARK

TO THE SPASTIC COLON

A combination of 'ELORINE Chloride', brand Tricyclamol Chloride, a new anti-cholinergic drug, with 'AMYTAL', for the control of spasm in

PEPTIC ULCER
PYLOROSPASM
GASTRITIS
COLITIS
ACUTE GASTRO-ENTERITIS

Lilly TRADE MARK

SUPPLIED: In bottles of 25, 100 and 1000 'Pulvules' brand filled capsules.
DOSE: 1–2 'Pulvules' three or four times daily.

ELI LILLY AND COMPANY LIMITED · BASINGSTOKE · ENGLAND

SEPT. 25, 1954 PAGES 607 TO 662

THE LANCET

A JOURNAL OF BRITISH AND FOREIGN MEDICINE, SURGERY, OBSTETRICS, PHYSIOLOGY, PATHOLOGY, PHARMACOLOGY, PUBLIC HEALTH, AND NEWS

No. 6839 LONDON: SATURDAY, SEPTEMBER 25, 1954 CCLXVII

CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT

ORIGINAL ARTICLES

Splitting of the First and Second Heart Sounds — AUBREY LEATHAM, M.R.C.P. 607

Chlorpromazine — C. A. FOSTER, F.F.A. R.C.S.; E. J. O'MULLANE, F.F.A. R.C.S.; P. GASKELL, M.D.; H. C. CHURCHILL-DAVIDSON, M.D. 614

The "Lytic Cocktail" — RALPH SHACKMAN, F.R.C.S.; F. G. WOOD-SMITH, F.F.A. R.C.S.; I. G. GRABER, F.R.C.S.; D. G. MELROSE, B.M.; R. B. LYNN, F.R.C.S. 617

The Effects of Aldosterone in Addison's Disease and Adrenal Pseudohermaphroditism — Prof. F. T. G. PRUNTY, F.R.C.P.; R. R. MCSWINEY, M.B.; I. H. MILLS, M.R.C.P.; MARGERY SMITH, B.SC. 620

Myocardial Toxoplasmosis — J. W. PAULLEY, M.R.C.P.; RONALD JONES, F.R.C.P.; W. P. D. GREEN, M.B.; E. P. KANE, M.B. 624

Epilepsy with Fetishism Relieved by Temporal Lobectomy — WILLIAM MITCHELL, M.D.; MURRAY A. FALCONER, F.R.C.S.; DENIS HILL, F.R.C.P. 626

Long-term Oxytetracycline (Terramycin) Therapy in Advanced Chronic Respiratory Infections — W. H. HELM, M.R.C.P.; J. R. MAY, M.D.; J. L. LIVINGSTONE, F.R.C.P. 630

PRELIMINARY COMMUNICATIONS

The Sex of Teratomata — W. F. HUNTER, M.B.; BERNARD LENNOX, M.D. 633

The Histochemistry of Pulmonary Hyaline Membrane in Newborn Infants and its Interpretation — J. C. WAGNER, M.B. 634

LEADING ARTICLES

CHLORPROMAZINE 637

ACUTE OBSTRUCTION OF THE COLON 637

THE SEX OF NUCLEI 638

ANNOTATIONS

Myocardial Toxoplasmosis 640

Complications of Mumps 640

Malaria in Sardinia 640

Prolonged Antibiotic Therapy 641

Xanthosis Cutis 641

Surgery of the Abdominal Aorta 642

Muscular Hypertrophy of the Lower Œsophagus 642

Cortisone and Hydrocortisone in Skin Diseases 643

Dominant Mutations and Multiple Tumours 643

NEW INVENTIONS

A Modification of the Dott Gag — RUSSELL M. DAVIES, M.R.C.S. 635

A Double-barrelled Syringe — J. D. MONTAGU, M.R.C.S. 635

REVIEWS

Notices of Books 636

SPECIAL ARTICLES

Diagnostic Problems in the Feeble-minded — L. T. HILLIARD, M.B.; LYDIA MUNDY, B.SC. 644

RECONSTRUCTION

Medical Advisory Machinery at Regional Level — T. LLOYD HUGHES, M.D. 647

THE WIDDICOMBE FILE

XVII. Problem Family and Problem Profession 648

INTERNATIONAL CONFERENCES

Poliomyelitis 650

Clinical Pathology and Geographical Pathology 651

IN ENGLAND NOW

A Running Commentary by Peripatetic Correspondents 654

LETTERS TO THE EDITOR

Mass Miniature Radiography (Dr. T. A. W. Edwards, Dr. A. R. Buckley) 655

Tuberculosis Rates (Dr. C. J. Stewart) 655

Lumbar Puncture in Poliomyelitis (Dr. G. E. Breen) 655

Agranulocytosis and Allonal (Dr. M. A. Peyman) 656

Methylpentynol in Labour (Dr. Grantly Dick Read) 656

Endomyocardial Fibrosis (Dr. A. D. Gillanders) 657

Deaths during Anæsthesia (Dr. H. J. Brennan) 657

The Renal Ducts of Bellini (Dr. P. J. Thung) 658

Medical Care of Students (Dr. A. H. Macklin) 658

Penicillin in the Treatment of Diphtheria (Lieut.-Colonel John Mackay-Dick, F.R.C.P.E.) 659

Hair in the Heel (Dr. Robert Piper) 659

Treatment of Plantar Warts (Dr. O. L. S. Scott) 660

Liability for Acts of Deputy (Dr. T. S. Eimerl) 660

MEDICINE AND THE LAW

Phenol Poisoning in Hospital 660

Standardisation of Electrical Fittings 660

OBITUARY

Stella Churchill 661

NOTES AND NEWS

Men over Sixty 661

The Young Drinkers 661

Fashions in Child Care 662

University of Sheffield 662

Royal College of Surgeons of England 662

Midland Centre for Neurosurgery 662

Royal Institute of Public Health and Hygiene 662

Diary of the Week 661

Appointments 660

Just Published

SURGERY OF THE CÆCUM AND COLON
By STANLEY AYLETT, M.B.E., F.R.C.S. 303 pages. 170 illustrations. 45s.

THE FOUNDATIONS OF SURGERY
By GEORGE PERKINS, M.C., M.Ch., F.R.C.S. 244 pages. 10s.

TEXTBOOK OF MEDICINE
Eleventh Edition. Edited by Sir JOHN CONYBEARE, K.B.E., M.C., D.M.(Oxon), F.R.C.P., and W. N. MANN, M.D., F.R.C.P. 920 pages. 80 illustrations. 37s. 6d.

AN INTRODUCTION TO PHYSICAL METHODS OF TREATMENT IN PSYCHIATRY
Third Edition. By WILLIAM SARGANT, M.B., F.R.C.P., D.P.M., and ELIOT SLATER, M.D., F.R.C.P., D.P.M. 371 pages. 2 plates. 20s.

EMERGENCIES IN MEDICAL PRACTICE
Fourth Edition. Edited by C. ALLAN BIRCH, M.D., F.R.C.P. 622 pages. 153 illustrations. 32s. 6d.

TEXTBOOK OF OPERATIVE GYNÆCOLOGY
By WILFRED SHAW, M.D., F.R.C.S., F.R.C.O.G. 456 pages. 424 illustrations £5

New 1954 catalogue sent on request

E. & S. LIVINGSTONE LTD., Teviot Place, EDINBURGH

OXFORD MEDICAL PUBLICATIONS

THE ANATOMY OF THE BRONCHIAL TREE

by Sir RUSSELL BROCK, *M.S., F.R.C.S., F.A.C.S.*

SECOND EDITION — 250 *pages* — 286 *illustrations* (19 *in colour*) — 45s. *net*

Selected illustrations suitable for use as a wall chart are available, price 5s. net per packet of 9 plates.

A PRACTICAL MANUAL OF DISEASES OF THE CHEST

by MAURICE DAVIDSON, *D.M., F.R.C.P.*

FOURTH EDITION — 658 *pages* — 261 *illustrations* — 84s. *net*

THE DIAGNOSIS AND TREATMENT OF INTRATHORACIC NEW GROWTHS

by the same Author

with a chapter on Radiotherapy *by* DAVID W. SMITHERS, *M.D., M.R.C.P., D.M.R.* and a chapter on Operative Treatment *by* OSWALD S. TUBBS, *F.R.C.S.*

268 *pages* — 172 *illustrations* — 42s. *net*

OXFORD UNIVERSITY PRESS

BISMUTH IN A NEW PERSPECTIVE

BISMUTHO

Trade Mark — Brand

MASSIVE DOSE THERAPY

in the treatment of

PEPTIC ULCER

and other DIGESTIVE DISORDERS

BISMUTHO Compound Therapy consists of :

- A compound powder containing 75 grains of Bismuth Carbonate together with Magnesium Carbonate and Calcium Carbonate.
- A tablet containing Phenobarbitone and Ext. Bellad. Sicc.

Each powder and tablet is packed in a combined unit in cartons of 30 doses, i.e., one complete course of treatment.

A suggested diet sheet is enclosed.

Revised booklet on Bismutho therapy available on request.

C. J. HEWLETT & SON, LTD.

35-43 CHARLOTTE ROAD, LONDON, E.C.2

Also at 216, ORR STREET, GLASGOW, S.E.

BOOKS

Established Favourites

MEDICINE
Essentials for Practitioners and Students
By G. E. BEAUMONT, M.A., D.M., F.R.C.P.
Sixth Edition. 69 Illustrations. **37s. 6d.**

THE SCIENCE AND PRACTICE OF SURGERY
By W. H. C. ROMANIS, M.A., M.B., M.Ch., F.R.C.S., F.R.S. (Edin.), and PHILIP H. MITCHINER, *C.B., C.B.E.*, M.D., M.S., F.R.C.S.
Ninth Edition.
Vol. I. GENERAL SURGERY. 20 plates and 402 Text-figures. **32s.**
Vol. II. REGIONAL SURGERY. 8 Plates and 326 Text-figures. **36s.**

EDEN & HOLLAND'S MANUAL OF OBSTETRICS
Tenth Edition. Revised by ALAN BREWS, M.D., M.S., F.R.C.S., F.R.C.O.G. 57 Plates (12 Coloured) and 378 Text-figures. **52s. 6d.**

TEXTBOOK OF GYNÆCOLOGY
By WILFRED SHAW, M.A., M.D., F.R.C.S., F.R.C.O.G.
Sixth Edition. 4 Plates and 304 Text-figures. **27s. 6d.**

PARSONS' DISEASES OF THE EYE
Twelfth Edition. By Sir STEWART DUKE-ELDER, *K.C.V.O.*, D.Sc., M.D., F.R.C.S. 22 Coloured Plates and 465 Text-figures. **42s.**

DIBLE & DAVIE'S PATHOLOGY
An Introduction to Medicine and Surgery
Third Edition. By J. H. DIBLE, M.B., F.R.C.P.
417 Illustrations (9 in Colour). **54s.**

CLARK'S APPLIED PHARMACOLOGY
Eighth Edition. Revised by ANDREW WILSON, M.D., Ph.D., F.R.F.P.S., and H. O. SCHILD, M.D., Ph.D., D.Sc.
120 Illustrations. **37s. 6d.**

STARLING'S PRINCIPLES OF HUMAN PHYSIOLOGY
Eleventh Edition. By Sir CHARLES LOVATT EVANS, D.Sc., F.R.S. 709 Illustrations. **52s. 6d.**

A TEXTBOOK OF SURGICAL PATHOLOGY
By C. F. W. ILLINGWORTH, *C.B.E.*, Ch.M., F.R.C.S. (Edin.), and B. M. DICK, M.B., F.R.C.S. (Edin.).
Sixth Edition. 317 Illustrations. **45s.**

Latest Volumes

THE HÆMOLYTIC ANÆMIAS
Congenital and Acquired
By J. V. DACIE, M.D., M.R.C.P. 98 Illustrations. **50s.**

LEG ULCERS
Their Causes and Treatment
By S. T. ANNING, *T.D.*, M.A., M.D., M.R.C.P.
50 Illustrations. *About* **17s. 6d.**

ANATOMY
Regional and Applied
By R. J. LAST, M.B., B.S., F.R.C.S.
309 Illustrations, many in Colour. **55s.**

TWENTY-FIVE YEARS
The Story of the Royal College of Obstetricians and Gynæcologists—1929-1954
By Sir WILLIAM FLETCHER SHAW, M.D., F.R.C.P., F.R.C.O.G., Hon.LL.D. 12 Plates. **21s.**

HISTOLOGY
Edited by ROY GREEP, Ph.D. 648 Illustrations. **105s.**

THE ESSENTIALS OF MATERIA MEDICA, PHARMACOLOGY AND THERAPEUTICS
By R. H. MICKS, M.D., F.R.C.P.I. *Sixth Edition.* **24s.**

INFANT FEEDING AND FEEDING DIFFICULTIES
By P. R. EVANS, M.D., F.R.C.P., and RONALD MacKEITH, D.M., F.R.C.P. *Second Edition.* 66 Illustrations. **12s. 6d.**

PRACTICAL PROCEDURES IN CLINICAL MEDICINE
Biochemical and Radiological Investigations
By R. I. S. BAYLISS, M.A., M.D., M.R.C.P.
Second Edition. 61 Illustrations. **32s.**

CLINICAL MEDICINE IN GENERAL PRACTICE
Edited by JOHN FRY, M.B., B.S., F.R.C.S. Foreword by Sir HENRY COHEN, M.D., D.Sc., F.R.C.P. **27s. 6d.**

J. & A. CHURCHILL Ltd. 104 GLOUCESTER PLACE, LONDON, W.1

SAUNDERS BOOKS

Nelson's TEXTBOOK of PEDIATRICS New (6th) Edition

Complete—Authoritative—Up-to-the-minute.

Outstanding in its authority, unique in its completeness, this is one of the really great books in American medicine. This new edition presents a complete clinical guide to total care of the child from the prenatal period through adolescence.

Quite indispensable to every pediatrician and physician who cares for children.

Edited by WALDO E. NELSON, M.D., Professor of Pediatrics at Temple University School of Medicine. With the collaboration of 70 eminent contributors. 1581 pages with 440 illustrations.

Price **$15.00** (**75s.** in U.K. & Eire only).

ATLAS OF PELVIC OPERATIONS

By Professor LANGDON PARSONS (Boston) and Professor HOWARD ULFELDER (Harvard). 231 pages and 220 plates. Price **$18.00** (**90s.** in U.K. & Eire only).

"... provides a solid foundation on which the apprentice or indeed the fully-fledged gynaecologist can build by practical observation and experience."—*The Journal of Obstetrics & Gynaecology of the British Empire.*

"... an excellent book, full of information from surgeons with a large repertoire of pelvic operations ... clearly sets forth the practice of a school whose present reputation stands high."—*Edinburgh Medical Journal.*

FLUID THERAPY IN PEDIATRICS

By Professor FONTAINE S. HILL (Tennessee). 275 pages, illustrated. Price **$6.00** (**30s.** in U.K. & Eire only).

Tells how to recognise and manage fluid and electrolyte disturbances in children.

W. B. SAUNDERS COMPANY LTD. *7, Grape Street, LONDON, W.C.2*

NEW BOOKS

PHYSICAL SIGNS IN CLINICAL SURGERY
By HAMILTON BAILEY; assisted by ALAN CLAIN
12th Edition. 8¾ × 5½ *in. 466 pp. 681 illustrations, many in colour.* **38s. 6d.**, post 1s. 3d. October, 1954.

For this edition a thorough revision has been carried out. The book includes more coloured figures than any other work of its size in medical literature.

A SYNOPSIS OF SURGERY (Hey Groves')
Edited by Sir CECIL WAKELEY, Bt., *K.B.E., C.B.*
14th Edition. 7½ × 4¾ in. 652 pp. 203 illustrations. **30s.**, post 1s. October, 1954.

The latest revision has been very thoroughly carried out, and due weight has been given to the rapid advances made in surgery in recent years, whilst obsolete and out-of-date material has been ruthlessly deleted.

A SYNOPSIS OF MEDICINE
By Sir HENRY TIDY, *K.B.E.*
10th Edition. 7½ × 4¾in. 1274 pp. **35s.**, post 1s. 3d. October, 1954.

A *multum in parvo* ready reference book for the busy medical practitioner or student. Everything he needs to know of any single medical disease or disorder will be found within its pages.

ANTIBIOTISM AND IMMUNITY MEDICINE OF TO-MORROW
By ALEXANDER KOMIS
8¾ × 5½ in. 72 pp. **8s. 6d.**, post 4d. September, 1954.
Based on the research work of the Greek School of Medicine, the book gives an interesting and provocative account of the place of antibiotism in the therapeutic armamentarium.

TECHNIQUES IN CLINICAL CHEMISTRY
By FREDERICK N. BULLOCK
8¾ × 5½ in. 184 pp. 7 illustrations. **16s. 6d.**, post 6d. October, 1954.
A day to day handbook for medical laboratory technicians intended to supplement the established reference manuals.

JOHN WRIGHT & SONS LTD., BRISTOL, 8

WHEN PRESCRIBING CHLORODYNE
medical men should be particular to specify

Dr. J. Collis Browne's CHLORODYNE

The Original and only genuine Chlorodyne

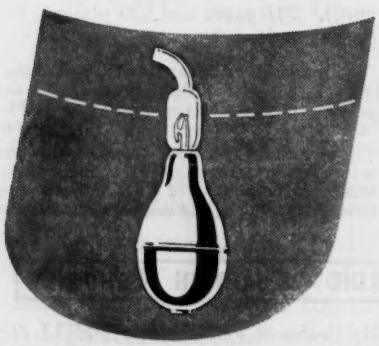
used with unvarying success by the Medical Profession in all parts of the world for over **100 YEARS**

Always insist on "Dr. Collis Browne's"

THERE IS NO SUBSTITUTE

NEW— The BROVONETTE

—the tiniest atomiser made



- *dimensions only 4⅛" x 1⅛".*
- *inconspicuous in vest pocket or handbag.*
- *produces remarkable volume of fine vapour.*

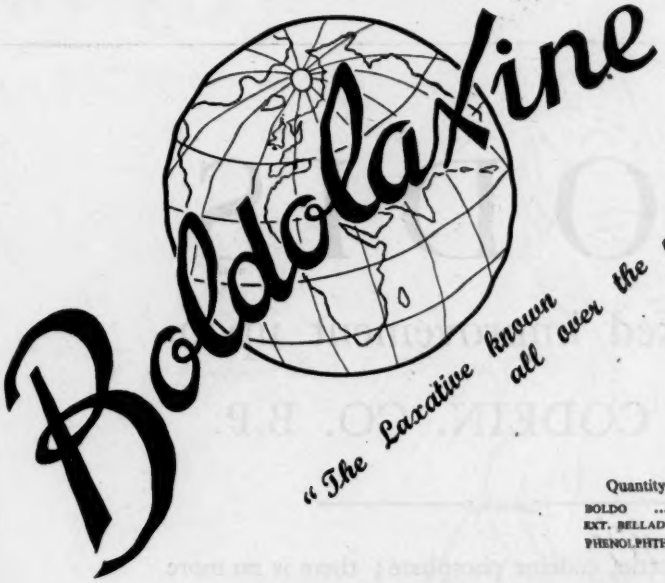
Other models in our valued range

All prescribable on Form E.C.10.

BASIC PRICES

Brovonette	**5/7**
Midget Amber	**7/-**
Bon-Accord (Glass)	**7/-**
Bon-Accord (Plastic)	**10/6**
Deedon Inhaler	**14/8½**

MOORE MEDICINAL PRODUCTS LTD.
1, QUEEN'S TERRACE, ABERDEEN • 64, GLOUCESTER PLACE, LONDON, W.1



Formula:
Quantity of Active ingredient in each Tablet

BOLDO	0.07	PODOPHYLLIN	0.002
EXT. BELLAD. SICC. B.P.	0.003	ICELAND MOSS	0.01
PHENOLPHTHALEIN ...	0.075		

Sole Distributors in Great Britain

W. FLETCHER (CHEMISTS) LTD.

5 RAMPAYNE STREET, LONDON, S.W.1 Telephone: VICtoria 5555

A Superior Buffered Analgesic

'ALASIL' TABLETS—the improved form of salicylate medication—provide the efficient analgesia expected from their content of aspirin. Their superior acceptability derives from their content of a reliable buffer which minimizes the tendency to gastric irritation sometimes caused by the use of aspirin alone.

Advantages

'Alasil' is an advanced sedative and antipyretic; it does not tend to induce gastric irritation; because of its high tolerability, it may be used for long-term administration even to those with sensitive stomachs, and to children.

Composition

'Alasil' Tablets contain the recognized antacid corrective, 'Alocol' (Colloidal Aluminium Hydroxide), which permits their sedative principle, acetylsalicylic acid, to exert its action with minimal risk of side-effects.

Indications

Symptomatic pain generally; rheumatism, fibrositis, lumbago, headache, dysmenorrhoea; dental pain.

Packs & Prices

TO PHARMACISTS (*P.T. exempt for dispensing*)
Standard size: 1000 in 250 bottles, 30/8,
'Juvenile' size: 375, 6/6; 750, 11/3; 1500, 21/6.

Available on N.H.S. Scripts

ALASIL JUVENILE TABLETS

Alasil 'Juvenile' Tablets specially sized for children, and neither coloured nor flavoured, are packed in tubes bearing dosage-for-age instructions.

Alasil

M.391

SAMPLE & LITERATURE ON REQUEST TO A. WANDER LTD., 42 UPPER GROSVENOR ST., LONDON W.1.

CODIS

A marked improvement upon

TAB. CODEIN. CO. B.P.

Aspirin, phenacetin, codeine phosphate; there is no more familiar group of analgesic drugs. 'Codis' improves upon it. In Codis the 'aspirin' is soluble, as in 'Solprin,' and rapidly forms a solution of palatable calcium aspirin.

A Codis tablet placed uncrushed in water provides, in a few seconds, a solution of calcium aspirin and codeine phosphate, with phenacetin in fine suspension.

The advantages of analgesic therapy with Codis are, rapid disintegration of the tablet in water with resulting greater ease of administration, and far less likelihood of intolerance by the patient. The chance of gastric irritation is minimised because there are no undissolved particles of aspirin.

COMPOSITION

Each Codis tablet weighs 11.45 *grs. and contains:—Acid. Acetylsalicyl. B.P.* 4 *grs., Phenacet. B.P.* 4 *grs., Codein. Phosph. B.P.* 0.125 *grs., Calc. Carb. B.P.* 1.2 *grs., Acid. Cit. B.P. (Exsic.)* 0.4 *grs.*

Codis is not advertised to the public.

N.H.S. basic price for 300 tablets in distinctive gold foils of 6 tablets each, 16/6 per box.

OTHER SIZES—Packs of 20 tablets (in bottles or foil).

RECKITT & COLMAN LTD., HULL AND LONDON (PHARMACEUTICAL DEPT., HULL).

To safeguard a birthright

Ortho

Massé

NIPPLE CREAM

aesthetic, emollient, healing

in antepartum nipple conditioning
and postpartum nipple care

Massé contains:
9-amino acridine and allantoin
in a non-greasy, odourless and stainless cream base
LITERATURE ON REQUEST

Ortho Pharmaceutical Limited

Ortho

HIGH WYCOMBE · BUCKINGHAMSHIRE · ENGLAND

NOW AN ACCEPTED TREATMENT . . .

Transvasin

Contains skin-penetrating esters of salicylic, nicotinic, and p-aminobenzoic acids. It brings real relief to deep-seated muscular rheumatism by simple inunction.

TRANSVASIN, a new preparation developed by Hamol S.A., our Swiss associates, and now available for prescription in this country, contains *esters* of salicylic, p-aminobenzoic and nicotinic acids. These esters readily pass the skin barrier in therapeutic quantities and enable an effective concentration of the drugs to be built up where they are needed. Transvasin not only induces vasodilation of the skin with a superficial erythema, but also brings about a deep hyperaemia of the underlying tissues. It is non-irritant, and can be safely used on the skin.

It is now being widely prescribed, with highly successful results. There is evidence, also, that since a very small quantity is sufficient for each application, the cost of treatment is extremely low.

Salicylic acid tetrahydrofurfuryl-ester	14%
Nicotinic acid ethyl-ester	2%
Nicotinic acid n-hexyl-ester	2%
p-Aminobenzoic acid ethyl-ester	2%
Water-miscible cream base ad	100%

Transvasin is available in 1 oz. tubes at 3/4½ plus 7½d P.T., which are obtainable on form E.C.10, and is not advertised to the public.

Samples and literature will be gladly sent on application.

LLOYD-HAMOL LTD., 11 Waterloo Place, London, S.W.1 WHItehall 8654/5/6

A 1000-year old drug takes on a new significance

FOR a thousand years—and probably longer—the value of senna has been recognised. But not until the introduction of Senokot has the *full* therapeutic activity of the drug been made available and its re-educative effect demonstrated.

CLINICAL EVALUATION

"A reliable, completely satisfactory preparation of senna."
Brit. Encycl. Med. Pract., Int. Suppl., March, 1954.

"Constant in action, produces no discomfort, and has no after-constipating effect."
Medical Press, June 9, 1954, p. 523.

"A valuable ally in the cure of chronic constipation."
Practitioner, March, 1953, p. 272.

Senokot Regd

STANDARDISED SENNA GRANULES

CATEGORY 3: Joint Committee on Prescribing

PACKINGS—2 oz., 6 oz.; and 2 lb. (Tax Free).

WESTMINSTER LABORATORIES LTD., CHALCOT ROAD, LONDON, N.W.1

The advantages of FENOX nasal drops

Fenox gives two-stage vasoconstriction—prompt and sustained—without side effects

Fenox is non-oily—no interference with ciliary action, no danger of lipoid pneumonia

Fenox remains at the site of action —same viscosity as mucus

Fenox is non-irritant —*p*H adjusted and isotonic with nasal secretion.

Fenox is readily absorbed by the mucosa—low surface tension.

Fenox is suitable for both children and adults.

THE IDEAL NASAL DECONGESTANT

FENOX, the only preparation containing phenylephrine hydrochloride *and* naphazoline nitrate, marks an advance in the local treatment of catarrhal conditions of the nasal passages and accessory sinuses. It exhibits all the properties of the ideal nasal decongestant.

FENOX is supplied in ½ fl. oz. dropper bottles. RETAIL PRICE 2/6d., subject to usual discounts.

Literature and "Patients' Directions" pads are available from the Medical Department, Boots Pure Drug Co. Ltd. Nottingham

Boots

S191

Sympatol

REGD. TRADEMARK

A CARDIOVASCULAR DRUG

Brand p-Methylaminoethanolphenol tartrate

PACKING AND SIZES:

Sympatol liquid 10%

Bottles of 20 cc.

Bottles of 100 cc.

Sympatol ampoules (0.06 g) for injection

Boxes of 6 ampoules

Hospital Pack

of 30 ampoules

For the treatment of collapse

For the treatment of constitutional hypotension

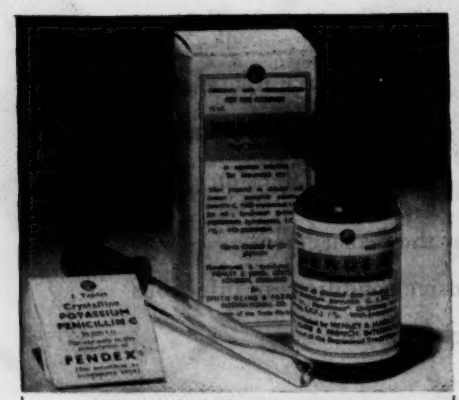
For the management of hypotensive conditions in infectious and chronic illnesses

LEWIS LABORATORIES · LTD · LEEDS

A range of nasal preparations to meet every need

'Paredrinex' Spraypak
liquid vasoconstrictor ½-fl. oz.

'Sulfex' nasal drops
sulphathiazole with vasoconstrictor
1-fl. oz. bottles, with dropper



'Pendex' nasal drops
penicillin with vasoconstrictor
15 ml. bottles, with dropper

'Benzedrine' Inhaler
volatile vasoconstrictor

For cost to N.H.S., please see M. & J. list of costs dated April 1954

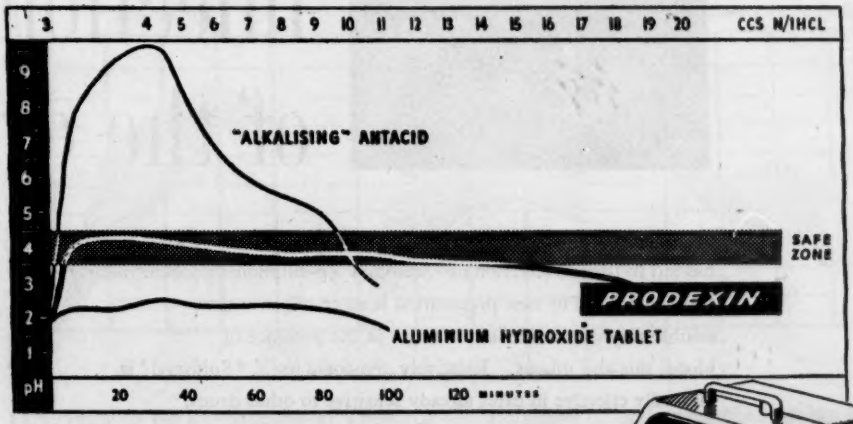
MENLEY & JAMES, LIMITED, COLDHARBOUR LANE, LONDON, S.E.5

for Smith Kline & French International Co., owner of the trade marks
'Paredrinex' 'Spraypak', 'Sulfex', 'Pendex', and 'Benzedrine'

NAP44

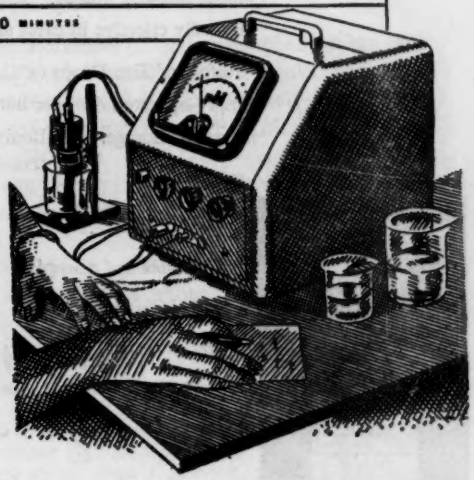
A New development providing CONTROLLED antacid therapy

Prodexin is a new product containing aluminium glycinate, and belongs to the buffer group of antacids. It depends for its action upon the slow release, on hydrolysis, of active aluminium hydroxide gel and glycine (amino acetic acid). Glycine rapidly raises the pH to 2, sparing the aluminium gel for the later stage of raising it into the "safe zone" of pH 3·5 to 4·5. Prodexin maintains an equable gastric environment for long periods without alkalisation.


3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 CCS N/1HCL
9 8 7 6 5 4 3 2 1 pH
"ALKALISING" ANTACID
SAFE ZONE
PRODEXIN
ALUMINIUM HYDROXIDE TABLET
20 40 60 80 100 120 MINUTES

Prodexin provides a convenient, economical and safe treatment for HYPERACIDITY and PEPTIC ULCER.

The tablets, sucked one at a time, maintain the pH of the stomach contents within the "safe zone" for up to two hours. With Prodexin there is no risk of acid rebound or alkalosis. Prodexin tablets are pleasant to suck and they do not form gritty particles in the mouth or give rise to constipation.



PRODEXIN

Each tablet contains:—

Aluminium glycinate.....0·9 gramme.
(*dihydroxy aluminium aminoacetate*)
Light magnesium carbonate.....0·1 gramme.

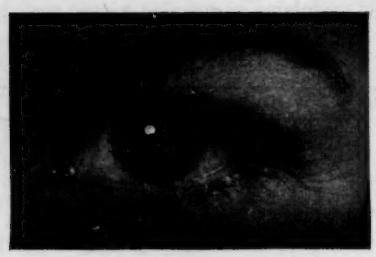
The basic N.H.S. cost of treatment at the rate of 6 Prodexin tablets daily is 8½d.

Manufactured in the laboratories of

C. L. BENCARD LIMITED

MINERVA ROAD · PARK ROYAL · LONDON N.W.10

BENCARD



A NEW product for infections of the eye

The need for a non-irritant sulphonamide for ophthalmic use has led to the introduction of 'Sulfomyl' (p-sulphonamidobenzylamine propionate). The new preparation is more effective than soluble sulphacetamide and is active in the presence of blood, pus and mucus. Relatively non-toxic itself, 'Sulfomyl' is markedly effective in cases already sensitive to other drugs.

'Sulfomyl' Eye Drops (5%) are packed in a convenient and simply-operated dropper bottle designed to give an accurately measured dosage. 'Sulfomyl' is also available as a 2.5% ointment.

(Practitioner, June 1954, 172, 682)

Literature and a sample will gladly be sent on request

SULFOMYL EYE DROPS

Trade Mark

Manufactured by

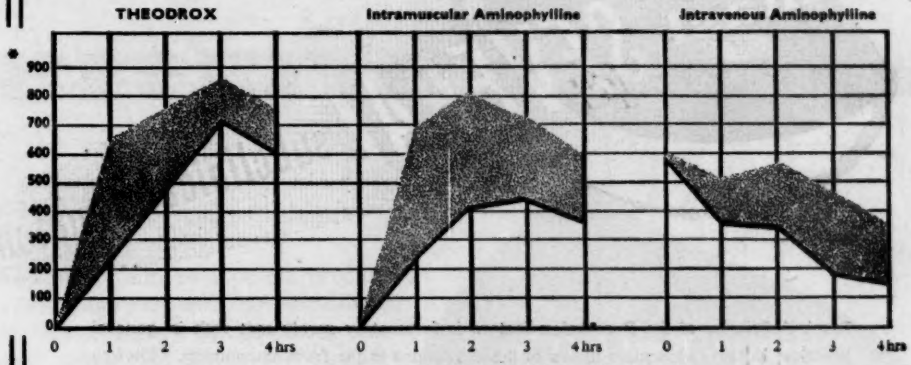
BAYER PRODUCTS LTD · LONDON

ASSOCIATED EXPORT COMPANY: WINTHROP PRODUCTS LTD · LONDON

THEODROX

ADEQUATE ORAL AMINOPHYLLINE

The tables below show blood levels obtained after a single dose of aminophylline parenterally and a single dose of oral Theodrox. The blood levels produced by oral Theodrox compare favourably with those produced by parenteral administration of aminophylline.



* *Micrograms of theophylline per 100 c.c. of blood.*

Prior to the introduction of Theodrox the usefulness of oral aminophylline has been limited by failure to obtain adequate blood levels because of gastric intolerance. With Theodrox this difficulty is overcome and effective oral dosage is entirely feasible.

Each tablet of Theodrox contains 3 gr. of aminophylline B.P. with 4 gr. of dried aluminium hydroxide gel, B.P.C.

In the form of Theodrox, aminophylline can be administered orally to produce results comparable with intravenous or intramuscular dosage, yet without the inconvenience and danger of parenteral administration.

Theodrox is supplied in containers of 25, 100 and 1,000 tablets.

Theodrox is also available as Theodrox with Phenobarbitone, each tablet containing in addition ½ gr. of Phenobarbitone B.P.

REFERENCES

Administration of Aminophylline, *J. Amer. Med. Ass.*, 143 : 736, June, 1950. (This study does not refer to Theodrox.)

A New Approach to Increasing Tolerance to Oral Aminophylline. *Postgrad. Med.* 13 : 432, May, 1953. Abstracted ; *Practitioner* 171 : 328 (Sept. 1953)

Studies with Two New Theophylline Preparations, *Amer. J. med. Sci.*, 224 : 627, 1952.

THEODROX is a trade mark of

RIKER LABORATORIES LTD. LOUGHBOROUGH, LEICS.

Detailed literature gladly sent on request.

Frank deficiency of the B complex factors is fortunately rarely met with in general practice, but an *inadequate intake* of these vitamins is far from uncommon. Though the patient may exhibit only a single clinical sign, suggesting that one factor alone is needed, this is often circumstantial evidence of hidden needs and masked symptoms involving other factors of the complex. Thus when prescribing one of the B group vitamins there is every justification for prescribing them all.

No preparation meets this need more efficiently than Lederplex. It contains the *entire* natural vitamin B complex derived from liver and is fortified with Folvite* Folic Acid and vitamin B_{12}, with other important nutritional factors. Lederplex will prove a particularly firm ally during the months ahead for ensuring an adequate intake of B complex vitamins.

LEDERPLEX*

VITAMIN B COMPLEX

Capsules: Bottles of 100 and 500
Tablets: Bottles of 100 and 1,000
Liquid: Bottles of 4, 8 and 12 fluid ounces

* Regd. Trade Marks

Lederle

LEDERLE LABORATORIES DIVISION
Cyanamid Products Ltd.
BUSH HOUSE · ALDWYCH · LONDON · W.C.2 · TEMPLE BAR 5411

A new Ganglionic Blocking Preparation

METHIUM CHLORIDE

in the treatment of Hypertension

The methonium compounds procure vasodilation through the autonomic nervous system, by blocking the vasoconstrictor impulses almost as effectively as does surgical excision of the ganglia. Their action has been described as "medical sympathectomy." The most satisfactory member of this series is hexamethonium chloride which, as a Warner product, bears the name *Methium Chloride*.

Compared with the many other hypotensive agents known to medicine, *Methium Chloride* has the advantages that it can be given by mouth in gradually increasing doses, that the safety margin is adequate and side-effects controllable, and there is no risk of bromide or iodide intoxication.

Dosage:
As with other methonium salts, the individual dose varies from patient to patient, each of whom must be carefully examined and assessed in order to find the correct dosage.

Packing:
Methium Chloride is an S.IV poison, not subject to purchase tax. Bottles of 50 tablets are supplied in 125 mg. and 250 mg. strengths. Dispensing bottles of 500 tablets available in 125 mg. strength at 40/- and 250 mg. strength at 68/-. Literature giving full particulars and a trial supply of Methium Chloride, supplied on request.
Methium Chloride is listed in Category 1 of the Cohen Report and is therefore a recognized drug that can be widely prescribed under the N.H.S.

William R. Warner & Co. Ltd., Power Road, London, W.4.

Note about cost:

Under the National Health Service the basic cost of 25 'Sulmezil' Tablets is 13/4, and a 50 cc bottle of 'Sulmezil' Oral Suspension (containing 14 teaspoonful doses) is 9/4. 'Sulmezil' is free from Purchase tax.

= 'Sulmezil'

COMBINED ORAL PENICILLIN AND 'SULPHAMEZATHINE' THERAPY

TABLETS: *each contain* 0.5 *gramme* '*Sulphamezathine*' *Sulphadimidine B.P. and* 150,000 *units* '*Dibencil*' *benzathine penicillin.*

ORAL SUSPENSION: *each fluid drachm contains* 0.5 *gramme* '*Sulphamezathine*' *and* 150,000 *units* '*Dibencil*' *benzathine penicillin. Pleasantly flavoured and stable.*

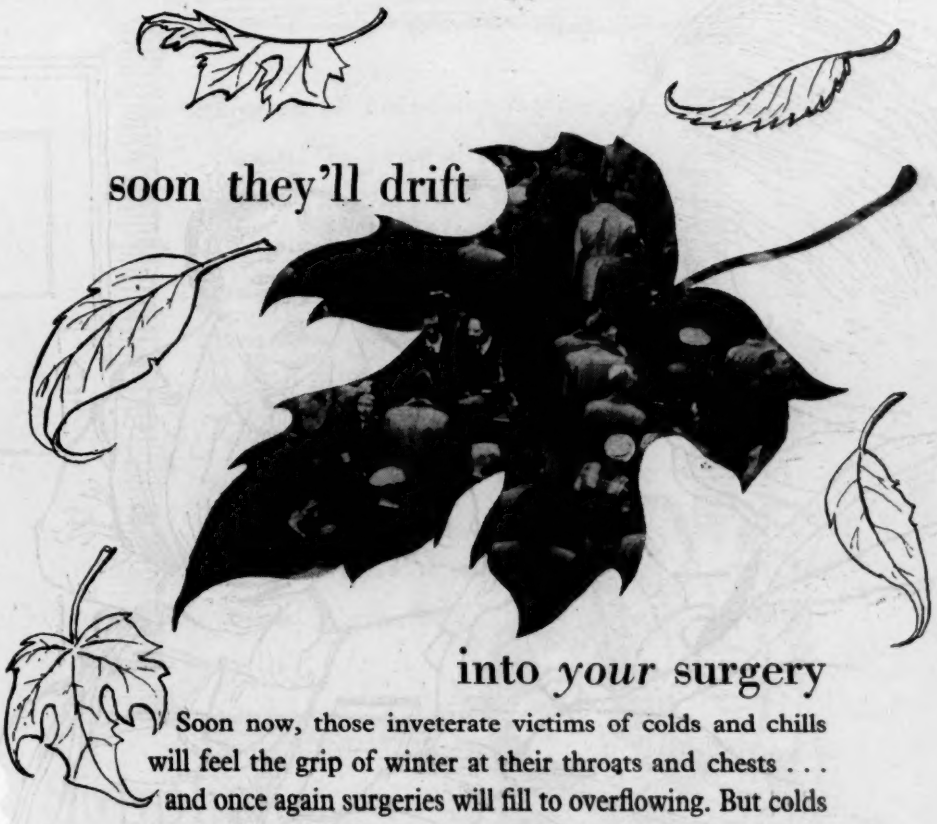
ICI

IMPERIAL CHEMICAL (PHARMACEUTICALS) LIMITED

A subsidiary company of Imperial Chemical Industries Limited

WILMSLOW, MANCHESTER

Ph.463



soon they'll drift

into *your* surgery

Soon now, those inveterate victims of colds and chills will feel the grip of winter at their throats and chests . . . and once again surgeries will fill to overflowing. But colds can be averted, minimised and thrown off rapidly. *Started now*, a course of Adexolin—vitamins A and D in high concentration—will prepare the body in good time to withstand the rigours of winter; not by providing a short-term fillip, but by fortifying the body's resistance to infection through the *natural* mechanisms. Adexolin is available in two forms: convenient capsules for children and adults . . . and, for infants, a tasteless liquid that can be mixed with bottle feeds or given direct to the tongue.

ADEXOLIN
Trade mark

Capsules
(6,000 units vitamin A,
1,000 units vitamin D)
25, 100 and 1,000

Liquid
(12,000 units vitamin A,
2,000 units vitamin D per cc.)
½-oz., 2-oz. and 16-oz.

GLAXO

GLAXO LABORATORIES LIMITED, GREENFORD, MIDDLESEX BYRon 3434

Merrell

Nervous dyspepsia has become a problem *to be reckoned with, provoking investigation* and research and suggestions for remedies . . . 'Merbentyl' is one of the newest and most effective. It is an antispasmodic with both neurotropic and musculotropic effect upon smooth muscle of the gastro-intestinal and genito-urinary tracts, *producing excellent results* in the relief of painful spasm associated with functional and organic gastro-intestinal disease. Compared with other antispasmodics both natural and synthetic, 'Merbentyl' *is strikingly free from side-effects.*

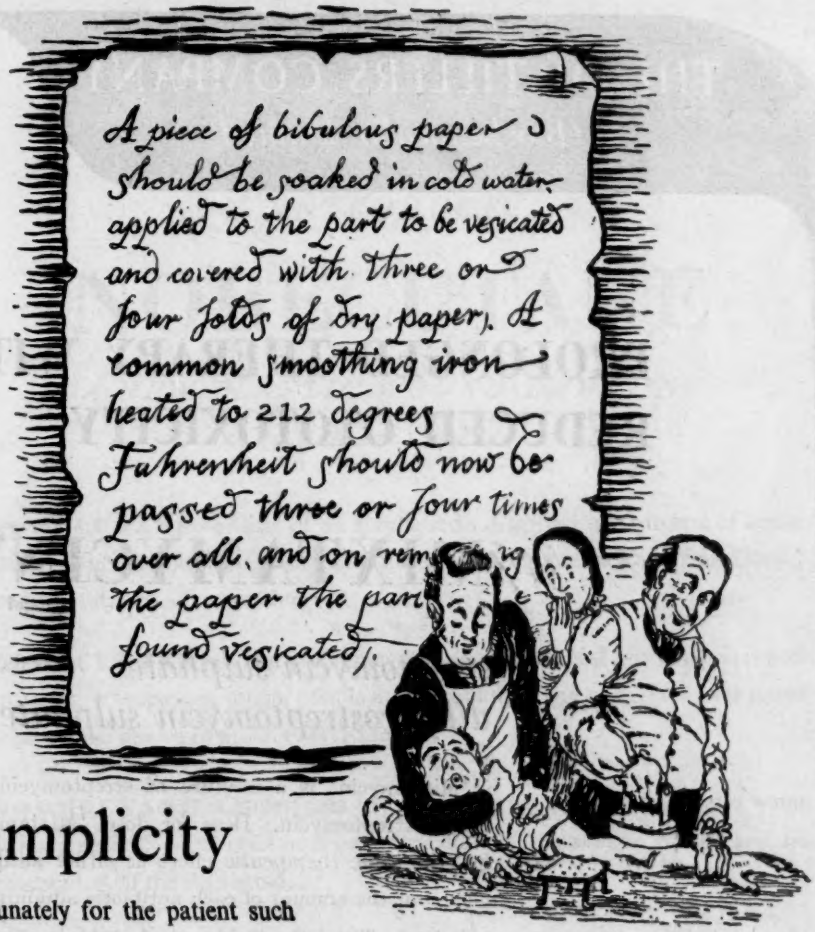
MERBENTYL

distributed in the United Kingdom & Eire by
RIKER LABORATORIES LIMITED, LOUGHBOROUGH, LEICS.
for the Wm. S. Merrell Company, London.

MERBENTYL *Tablets each containing 10 mg. Diethylaminocarbethoxybicyclohexyl hydrochloride.*

MERBENTYL WITH PHENOBARBITONE *Tablets each containing 10 mg. Diethylaminocarbethoxybicyclohexyl hydrochloride and 15 mg. Phenobarbitone.*

Each in bottles of 50 and 250 tablets. The basic N.H.S. cost of treatment is less than 5d. a day.


A piece of bibulous paper
should be soaked in cold water
applied to the part to be vesicated
and covered with three or
four folds of dry paper. A
common smoothing iron
heated to 212 degrees
Fahrenheit should now be
passed three or four times
over all, and on removing
the paper the part
found vesicated.

Simplicity

Fortunately for the patient such primitive procedures have passed into oblivion; but the basic principles of counter-irritation still remain.

ALGIPAN Balm is the modern physiological outlet for the rubefacient treatment of non-articular rheumatism. Application of this smooth, clean, histamine cream by the patient is *simplicity* itself.

ALGIPAN is non-greasy, will not stain or damage clothes, has no objectionable odour, and is harmless to the most sensitive skin.

ALGIPAN is available in 40 G. tubes. Convenient for the ambulant patient.

Wyeth

JOHN WYETH & BROTHER LIMITED
Clifton House, Euston Road, London, N.W.1.

'Algipan'
Trade Mark
BALM

THE DISTILLERS COMPANY
(Biochemicals) Limited

PROLONGED THERAPY WITH REDUCED OTOTOXICITY

'MIXTAMYCIN'
brand

streptomycin sulphate
dihydrostreptomycin sulphate

'Mixtamycin' is a mixture of streptomycin and dihydrostreptomycin. Dose for dose, 'Mixtamycin' has the same therapeutic effect as either antibiotic alone but the amount of each antibiotic administered is halved. Thus, the incidence of ototoxic reactions associated with prolonged therapy of streptomycin alone or dihydrostreptomycin alone is reduced. 'Mixtamycin' may, therefore, be given for longer periods.

Packs: injection-type vials of one mega unit (boxes of 5 vials) and 5 mega units (single packs).
Each mega unit contains the equivalent of 0.5 gramme streptomycin base and 0.5 gramme dihydrostreptomycin base.

Distributed by:
ALLEN & HANBURYS LTD.
BRITISH DRUG HOUSES LTD.
BURROUGHS WELLCOME & CO.
EVANS MEDICAL SUPPLIES LTD.
IMPERIAL CHEMICAL (PHARMACEUTICALS) LTD.
PHARMACEUTICAL SPECIALITIES (MAY & BAKER) LTD.

Manufactured by
THE DISTILLERS COMPANY (BIOCHEMICALS) LIMITED, DEVONSHIRE HOUSE, PICCADILLY, LONDON, W.1.
owners of the trademark 'Mixtamycin'

13/54

Evans Medical Supplies Ltd

INTRODUCE

NOBECUTANE

A NEW PLASTIC WOUND DRESSING

(*See* Brit. med. J. 1954. 2.17)

NOBECUTANE consists of an acrylic resin dissolved in a mixture of acetic esters. When applied to the dry skin the solvent evaporates leaving an elastic, transparent, and adhesive film.

* * *

NOBECUTANE has many advantages over conventional dressings. It is non-irritating, transparent, tough, pliable and durable and can be applied over joints where some degree of mobility is required.

* * *

NOBECUTANE is impervious to bacteria but permeable to air and water vapour and allows normal aqueous exhalation of the skin to escape and no maceration of the skin occurs.

* * *

NOBECUTANE is economical in use and results in a saving of at least 20% over the cost of conventional dressings. In addition it is welcomed by nursing staff who find it effects a considerable amount of saving in time.

* * *

NOBECUTANE is available to *hospitals only* in bottles of 250 ml. at a price of 17/6 per bottle. Each bottle contains adequate material for the dressing of approximately sixty to seventy surgical wounds.

Manufactured in Sweden by A. B. BOFORS, NOBELKRUT

Packed and issued by the sole distributors

EVANS MEDICAL

EVANS MEDICAL SUPPLIES LTD

LIVERPOOL AND LONDON

Attacks of MIGRAINE

respond to ORAL TREATMENT

with CAFERGOT

The parenteral administration of cerebral vasoconstrictors of the ergot series was formerly indispensable to abort so many as 80 to 90 per cent. of migraine attacks.

CAFERGOT given ORALLY is effective in at least 80 per cent. of attacks.

CAFERGOT tablets contain ergotamine tartrate (1 mg.) and caffeine (100 mg.)

Presentation: Bottles of 20, 100 *and* 500 *tablets.*

References

Proc. Mayo Clin., 1948, **23**, 105.
New England J. Med., 1949, **241**, 896.
J. Mo. med. Ass., 1951, **48**, 963.

Full information on request

SANDOZ PRODUCTS LIMITED

134, Wigmore Street, London, W.1.

SANDOZ

PRISCOL

ORALLY ACTIVE

PERIPHERAL VASODILATOR

for

RAYNAUD'S DISEASE

OBLITERATIVE ARTERITIS

PERIPHERAL ARTERIOSCLEROSIS

Priscol is of value in all cases where spasm is present and where the collateral blood supply can be augmented.

TABLETS (25 mg.)
Bottles of 40, 200 and 1,000.

PARENTERAL SOLUTION (25 mg./1 c.cm.)
Boxes of 6 and 25 ampoules. 10 c.cm. R.C. Vials

Ointment	Ophthalmic Ointment	Solution
20g. 1 lb.	5g. tubes	10 c.cm. 100 c.cm.

CIBA

'Priscol' is a registered trade mark denoting 2-benzyl imidazoline hydrochloride
Reg. user

CIBA LABORATORIES LIMITED
HORSHAM · SUSSEX

Telephone: Horsham 1234 *Telegrams: Cibalabs, Horsham*

12/3

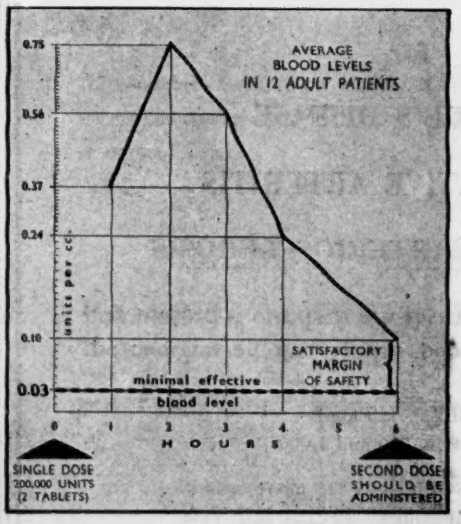
NEW ESTER

ORENCIL

ROUSSEL

LONG-ACTING ORAL PENICILLIN

Tablets of 100,000 units of benzhydrilamine penicillinate
(Original Roussel process)



Orencil's prolonged action is due to its slow release, and not to a reduction in renal excretion.

More prolonged action with smaller dose

ONLY 2 TABLETS 6-HOURLY

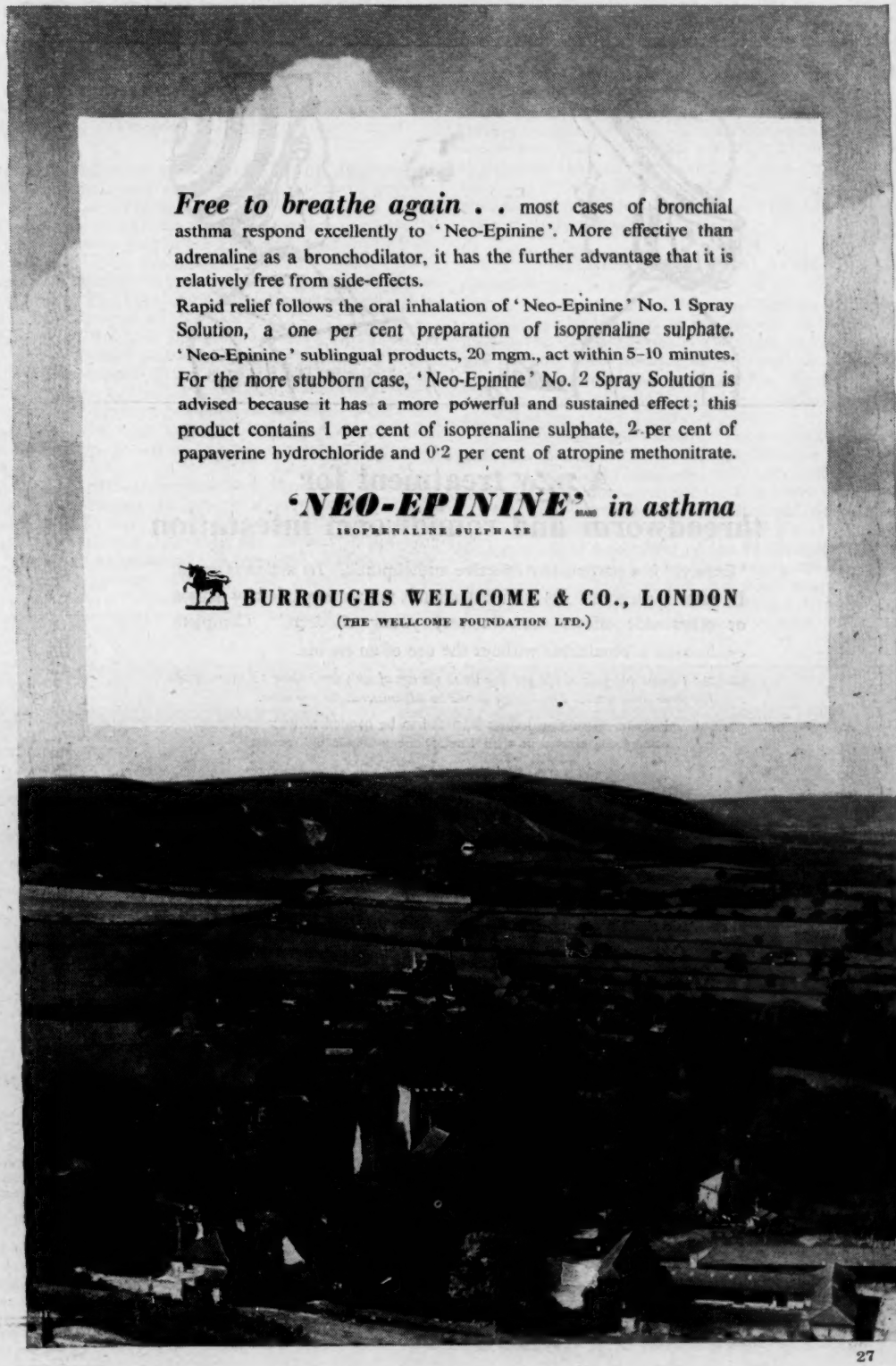
IN ADULTS—In most cases
2 tablets 6-hourly
(2 x 100,000 units)
give effective blood levels lasting about 7 hours.

IN INFANTS—
dosage should be halved.

Packings: tubes of 12 tablets.

ROUSSEL

ROUSSEL LABORATORIES LTD.
843-847 Harrow Road, London, N.W.10. LADbroke 3608



Free to breathe again . . most cases of bronchial asthma respond excellently to 'Neo-Epinine'. More effective than adrenaline as a bronchodilator, it has the further advantage that it is relatively free from side-effects.

Rapid relief follows the oral inhalation of 'Neo-Epinine' No. 1 Spray Solution, a one per cent preparation of isoprenaline sulphate. 'Neo-Epinine' sublingual products, 20 mgm., act within 5–10 minutes. For the more stubborn case, 'Neo-Epinine' No. 2 Spray Solution is advised because it has a more powerful and sustained effect; this product contains 1 per cent of isoprenaline sulphate, 2 per cent of papaverine hydrochloride and 0·2 per cent of atropine methonitrate.

'NEO-EPININE' BRAND ***in asthma***

ISOPRENALINE SULPHATE

BURROUGHS WELLCOME & CO., LONDON

(THE WELLCOME FOUNDATION LTD.)

A new treatment for threadworm and roundworm infestation

'Entacyl' is a particularly effective anthelmintic. Its action is rapid. Its taste is pleasant. Its administration is not accompanied by nausea or other side effects even in very young children. Complete eradication is obtainable without the use of an enema.

DOSAGE: *1 tablet per year of life per day up to the age of six years. Over six years of age 2 tablets three times a day. This dosage should be administered for one week.*

Pads of instruction leaflets intended to be handed to patients undergoing treatment with Entacyl are available on request.

'ENTACYL' TRADE MARK

Tablets containing Piperazine Adipate 300 mg.

(Brit. Pat. Appn. No. 29133/53)

Basic N.H.S. prices:
Bottles of 25 at 3/- and 100 at 10/-

Fully descriptive literature and specimen packings are available on request.

Medical Department

THE BRITISH DRUG HOUSES LTD. LONDON N.1

Ent/R/541

SPLITTING OF THE FIRST AND SECOND HEART SOUNDS *

AUBREY LEATHAM
M.B. Camb., M.R.C.P.
PHYSICIAN, ST. GEORGE'S HOSPITAL; ASSISTANT DIRECTOR, INSTITUTE OF CARDIOLOGY, NATIONAL HEART HOSPITAL, LONDON

THE importance of auscultation in the diagnosis of heart-disease has been extended by phonocardiography. The relation of sounds and murmurs to each other may be clearly seen on the phonocardiogram, particularly when two or more graphs are made simultaneously from different sites on the precordium (Leatham 1952). These records can be used to improve the accuracy of clinical auscultation. The following observations are confined to sounds which can be clearly heard.

Splitting of the first and second heart sounds can be discerned by careful auscultation in most people. When the two components of the first and second sounds are fused, little can be gained from a study of them; but, when they are separated or split, information is obtained from the interval that separates them and its variation with respiration, and from the relative intensity of each component.

Experience of both normal and abnormal degrees of splitting is necessary to recognise an auricular sound preceding the first sound, the opening snap of the mitral valve closely following the second sound, and the later third heart sound. Knowledge of their timing, pitch, site of greatest intensity, and behaviour during respiration enables one to identify each of these sounds without instrumental aid in most cases. Usually an abnormally loud auricular sound, the third heart sound, or a summation of these two gives the impression of a triple or gallop rhythm; these sounds, of very low pitch, are best appreciated with the bell type of stethoscope or by direct auscultation, and are not further considered here. The components of split first and second heart sounds are seldom sufficiently separated to produce the cadence associated with triple rhythm; they are high-pitched, resemble each other in quality, and are often better appreciated with the diaphragm type of stethoscope.

* Based on a communication to the Irish Cardiac Society at Dublin on Nov. 11, 1953.

Splitting of First Heart Sound

Causation

The first heart sound has been shown to occur in animals at the moment of contraction of the ventricles during the isometric phase (Wiggers and Dean 1917), and it has been possible to confirm its approximate synchronism with the onset of the right ventricular pressure pulse recorded through a cardiac catheter in man (Leatham and Vogelpoel 1954).

It seems reasonable to accept Dock's (1933) conclusions that the closing of the mitral and tricuspid valves at the moment of ventricular contraction are chiefly responsible for the major components of the first heart sound. Slight asynchronism of ventricular contraction is not uncommon in healthy animals (Katz 1925) and would be expected to cause slight separation of the two major components of the first heart sound. This is generally thought to explain the splitting of the first heart sound commonly found in healthy people. The splitting is most obvious at the tricuspid and mitral areas, especially the former,

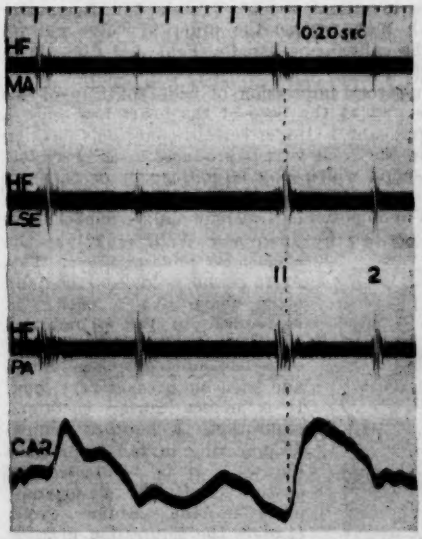


Fig. 1—Splitting of first heart sound (11) in a healthy person, shown by synchronous high-frequency phonocardiograms (HF) and resembling auscultation, from mitral area (MA), tricuspid area (lower left sternal edge, LSE), and pulmonary area (PA), taken during expiration.

Separation is slight (0·03 sec.). First component is louder at mitral area, and second at tricuspid area, suggesting that first component is due to closure of mitral valve, and second to closure of tricuspid valve. In any case, second component could not be due to closure of the mitral valve because it occurs after rise of pressure in carotid artery (CAR), thence aorta, and therefore long after rise of pressure in left ventricle. Time intervals in this and subsequent records are 0·04 and 0·20 sec.

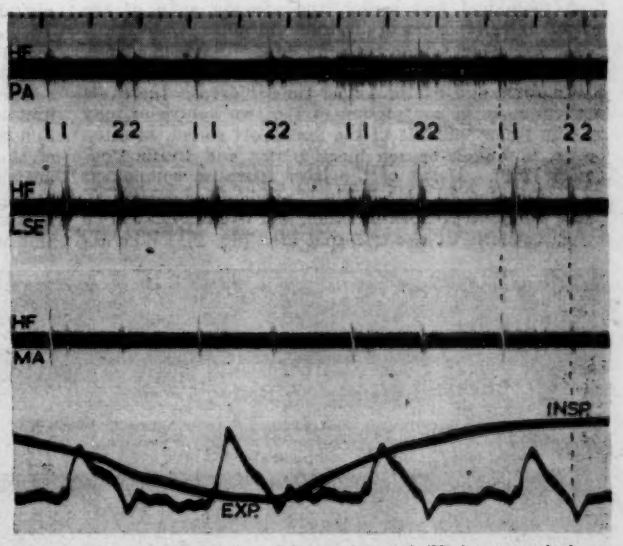


Fig. 2—Wide splitting of first and second (22) heart sounds due to right-sided electrical delay from complete right bundle-branch block.

Delayed tricuspid component of first sound (0·06 sec. after mitral component) is loudest at lower left sternal edge and not much altered by respiration, unlike pulmonary ejection sound. Second sound is split by 0·06 sec. in expiratory phase of respiration (EXP.) owing to delay in closure of pulmonary valve, increasing to 0·08 sec. during inspiration (INSP.). Identity of first component of split second sound as aortic is confirmed by its synchrony (with carotid delay about 0·03 sec.) with dicrotic notch of carotid tracing, and identity of second component as pulmonary by its greatest intensity at pulmonary area.

and is often more easily heard during the expiratory phase of respiration, as shown in fig. 8 (Potain 1866).

Phonocardiograms taken in 10 healthy people with this sign show that the degree of separation of the two components is slight, usually measuring 0·02–0·03 sec. (all measurements from onset of sound, pulse wave, or QRS). Synchronous records from the mitral and tricuspid areas show that the first component is usually louder at the mitral area, and the second at the tricuspid area (fig. 1). This suggests that the first component of a split first sound is due to closure of the mitral, and the second to closure of the tricuspid, valve.

Indirect carotid pressure pulses (from which the timing of aortic pulses can be calculated) recorded synchronously with the heart sounds show that the second component of a split first sound occurs after the rise of pressure in the aorta (fig. 1). This sound is therefore too late to be caused by closure of the mitral valve, and is most likely to be caused by closure of the tricuspid valve. The first component occurs about 0·03 sec. before the calculated time of rise of pressure in the aorta, and is therefore ascribed to closure of the mitral valve (giving an isometric time for the left ventricle of 0·03 sec.).

Both observations imply that the closure of the mitral valve before the tricuspid is responsible for physiological splitting of the first sound, and this precedence of left-sided events will also be found to account for splitting of the second heart sound.

Differential Diagnosis

The importance of the splitting of the first sound lies in its differentiation from an added auricular sound and from a presystolic murmur.

There should be no difficulty with the latter if it is remembered that the presystolic (auricular systolic) murmur of mitral stenosis is loudest at the apex and after exertion, and is almost invariably associated with a loud (palpable) first sound, the opening snap of the mitral valve, and a mid-diastolic murmur.

An auricular sound preceding the first sound may resemble a split sound, but should be recognised by its lower pitch, and by the longer time interval. Increased asynchronism of contraction of the two ventricles may lead to wider splitting of the first heart sound, as often occurs in bundle-branch block (Orías and Braun-Menéndez 1939). Delay of the later tricuspid component from right bundle-branch block would be expected to cause the more obvious splitting, and this is found to be so, particularly at the tricuspid area (fig. 2). Whereas this is electrical delay of one of the components of the first sound, there is mechanical delay in closure of the mitral valve in mitral stenosis (Cossio and Berconsky 1943), which may reverse the order of valve closure (fig. 14). The splitting is usually slight and difficult to detect clinically.

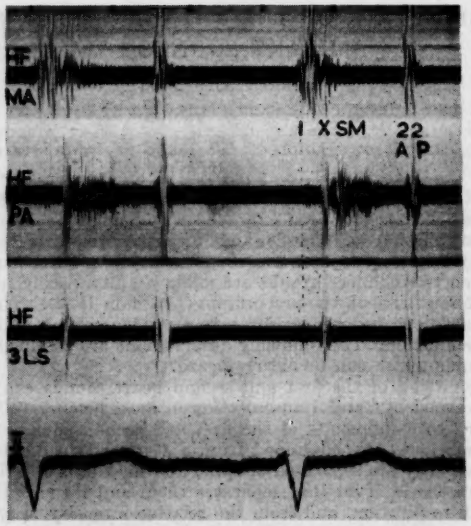


Fig. 4—Pulmonary early systolic ejection sound (X) in pulmonary hypertension (Eisenmenger's syndrome).

Pulmonary artery was greatly dilated. Sound precedes mid-systolic ejection murmur (SM) in pulmonary area and is more clearly heard in third left space, when its relationship to first heart sound can be better appreciated. Pulmonary component (P) of second heart sound dwarfs aortic component (A) in pulmonary area and is transmitted to mitral area.

The auscultatory impression of wide splitting of the first heart sound at the base of the heart has quite a different significance. Under certain conditions ejection of blood into the great vessels produces in early systole an audible sound which may be pulmonary or aortic in origin. The pulmonary early systolic sound has been investigated in 50 patients (Leatham and Vogelpoel 1954) and was described by Lian and Welti (1937) as the *claquement protosystolique*. This extra sound is high-pitched and often sharp like a click. It is loudest in the second and third left intercostal spaces and only transmitted to the mitral and tricuspid areas if very loud. It is louder during sustained expiration, sometimes almost disappearing in full inspiration (fig. 3). It is unaffected by posture and has a constant place in the cardiac cycle. It gives the impression of wide splitting of the first heart sound, but the second component usually has that sharper quality which suggests the term " pulmonary early systolic click." When the first heart sound is soft or inaudible in the pulmonary area, the added sound has sometimes been mistaken for a first sound of unusual snapping quality in the pulmonary area (fig. 3); on listening between the

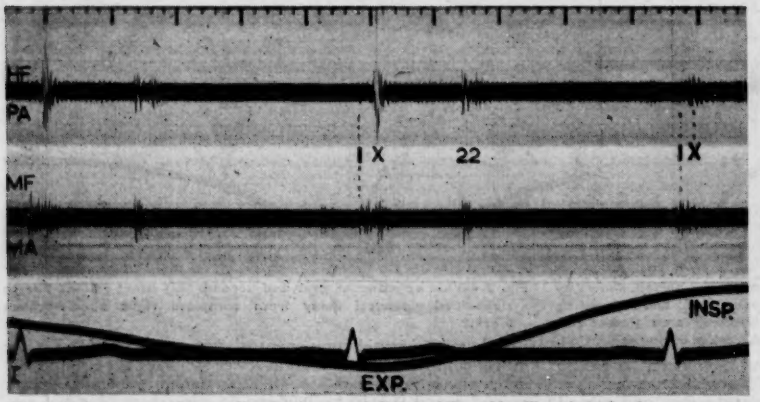


Fig. 3—Pulmonary early systolic ejection sound (X) in idiopathic dilatation of pulmonary artery.

It had been described as a " first sound of unusual snapping quality " in pulmonary area, where main first sound was inaudible, and was very loud during expiration and soft during inspiration, as shown in phonocardiogram from pulmonary area. A synchronous recording from mitral area shows main first sound (I) preceding pulmonary sound by 0·06 sec. Both sounds could be heard like wide splitting of first sound in an intermediate area.

pulmonary and mitral areas both sounds can be heard. Sometimes the extra sound just precedes (*fig. 4*), and may be obscured by, a pulmonary systolic murmur but can again be heard more plainly one intercostal space lower down. The pulmonary early systolic sound almost invariably indicates dilatation of the pulmonary artery, and this dilatation may be idiopathic, secondary to slight pulmonary stenosis, or due to pulmonary hypertension from any cause. The pulmonary hypertension, if responsible, is always great, and patients with mitral stenosis showing this sign should derive great benefit from valvotomy.

The pulmonary ejection sound may be partly due to the dilated pulmonary artery bringing ejection vibrations, which are normally inaudible, nearer to the chest wall. With pulmonary hypertension a second mechanism probably operates. The right ventricle takes longer to overcome the high pulmonary diastolic pressure, and ejection is late. Thus the interval between the first sound and the ejection sound is prolonged, and the extra sound is more easily distinguished.

Conversely, earlier ejection from low pulmonary-artery pressure in patients with severe pulmonary stenosis would be expected to bring the extra sound too near the first sound to be distinguished from it. Thus, no *separate* early systolic sound has been heard in patients with either moderate or severe pulmonary stenosis, even with striking dilatation of the pulmonary artery. Some of these patients have a loud clicking "first sound" in the pulmonary area, as described by Petit (1902), which disappears on inspiration (fig. 5). Synchronous phonocardiograms show that this sound in the pulmonary area occurs slightly later than both the mitral and tricuspid components of a split first sound recorded in the mitral and tricuspid areas (fig. 6), and it is probably an early ejection sound.

An aortic early systolic ejection sound is heard in some patients with dilatation of the ascending aorta from coarctation (fig. 7), hypertension, aortic-valve disease, luetic or dissecting aneurysm, and even, perhaps, normal age changes. It is more difficult to recognise because it is not much altered during respiration and is well transmitted to the apex, like all aortic events; hence it may be more easily confused with splitting of the first heart sound.

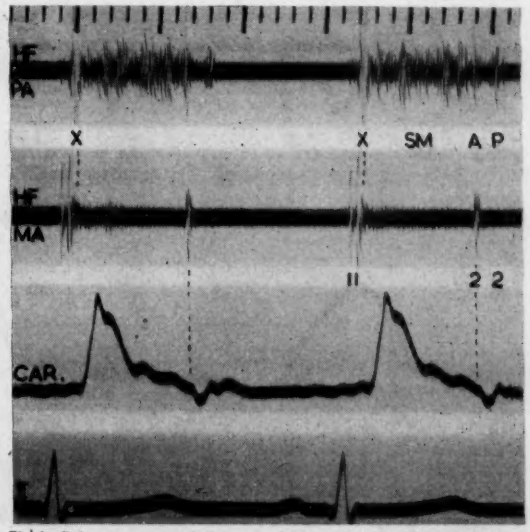


Fig. 6—Pulmonary stenosis (same patient as in fig. 5). Phonocardiogram taken at a greater speed, and in expiration, shows that "first sound" in pulmonary area (X) is preceded by both components of split first sound at mitral area, suggesting that pulmonary sound is ejection sound.

Second heart sound is widely split (0·06 sec.) owing to delay in pulmonary component from pulmonary stenosis.

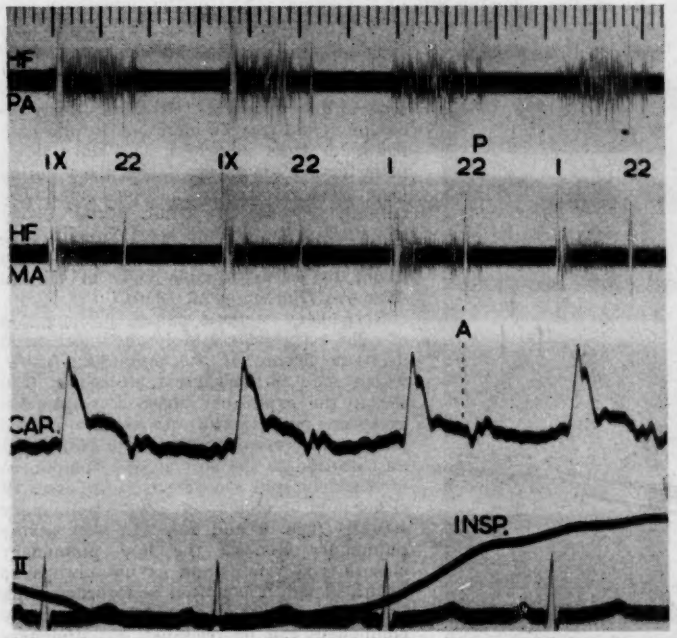


Fig. 5—Pulmonary stenosis (mild). Loud clicking "first sound" in pulmonary area (X) disappears on inspiration, although other sounds and systolic murmur have remained about the same in intensity.

Splitting of Second Heart Sound

Causation

Closing of the aortic and pulmonary valves is responsible for the second heart sound, and asynchronous closure of these valves causes its splitting. During the inspiratory phase of respiration there is an increase in the filling of the right ventricle from its large venous reservoir in the right auricle and great veins. Consequently there is a prolongation of right ventricular systole, with the result that the pulmonary valve closes after the aortic. Potain (1866) was well aware that splitting of the second heart sound could be heard in the pulmonary area during inspiration in many healthy people (fig. 8), and Barber et al. (1950) found no exceptions in 100 children. It can be heard, when sought for, in the majority of healthy adults, and graphic recordings (fig. 9) confirm the relation to the end of inspiration described by Potain.

Synchronous recordings from the pulmonary, aortic, and mitral areas confirm that splitting of the second heart sound is normally localised to the pulmonary area and the lower left sternal edge. The first component in the pulmonary area is synchronous with the single second sound at the aortic and mitral areas, and with the dicrotic notch of the carotid tracing, and is therefore due to closure of the aortic valve. The later component of the split second sound is maximal at the pulmonary area, and is presumed to

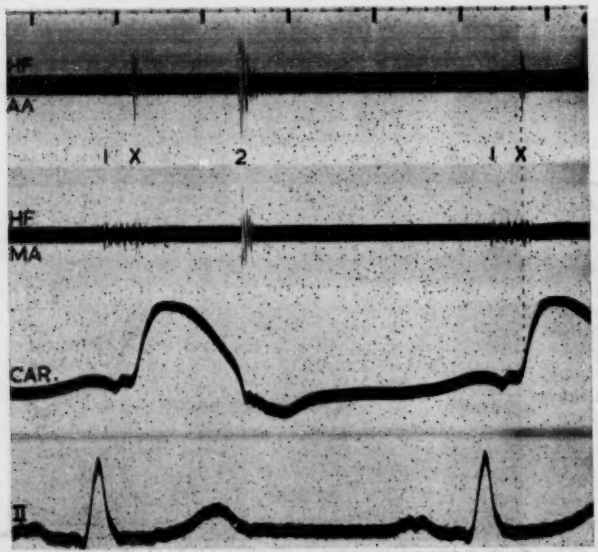


Fig. 7—Aortic early systolic ejection sound (X) occurring after rise of pressure in carotid artery, in dilatation of ascending aorta from coarctation.

be due to closure of the pulmonary valve (fig. 10); delay in this component during inspiration is responsible for the appearance or increase in splitting of the second heart sound during inspiration (Leatham and Towers 1951).

During respiration the second sound in the pulmonary area in the expiratory phase is single or split by a narrow interval measuring about 0·02–0·03 sec. During the inspiratory phase the splitting increases until the separation is obvious, usually measuring about 0·05 sec. and occasionally reaching 0·10 sec. with a very deep inspiration. During held expiration the interval may be a little wider than when breathing continues and may measure 0·04 sec. The relative size of the two components is variable, but the pulmonary component is usually smaller and, although well transmitted to the lower left sternal edge, is not normally loud enough to be heard at the mitral area. Transmission of the pulmonary component to the apex, causing splitting of the second heart sound in that area, usually means that this component is abnormally loud from pulmonary hypertension (fig. 4). Exceptions are found in cases of atrial septal defect without pulmonary hypertension, when a normal pulmonary component may be transmitted to the apex, as may the usual pulmonary systolic murmur (fig. 11), probably because the dilated right ventricle reaches the apex of the heart.

Abnormal Splitting of Second Heart Sound

Wide separation of the two components of the second sound in the pulmonary area is often heard in patients with heart-disease. A further increase in the splitting during inspiration means that the later component is due to closure of the pulmonary valve, and that the normal order of valve closure is maintained. Abnormally wide splitting is most easily diagnosed during the expiratory phase of continued respiration, when splitting is normally minimal.

The wide splitting may be classified as due to electrical or to mechanical delay in closure of the pulmonary valve or to early closure of the aortic valve. In partial or complete right bundle-branch block the electrical delay in excitation of the right ventricle causes delay in closure of the pulmonary valve (fig. 2). The interval between the two components of the second sound in the pulmonary area is abnormally wide (more than 0·04 sec.) during the expiratory phase of continued respiration (although normal splitting can be just as wide or wider during a deep inspiration). In atrial septal defect slight electrical delay is common, and may be increased by mechanical delay from increased right-sided flow; little further separation takes place during inspiration (M. Towers, personal communication). Thus, in atrial septal defect splitting of the second heart sound tends to be wide and fixed (fig. 11) and has been found to be a valuable sign in clinical diagnosis (Barber et al. 1950).

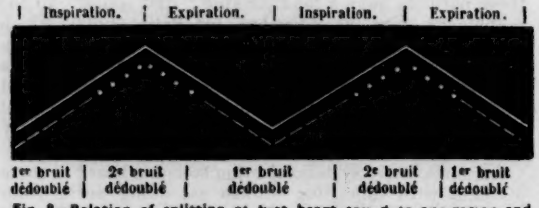


Fig. 8—Relation of splitting of first heart sound to expiration and of second sound to height of inspiration (Potain 1866).

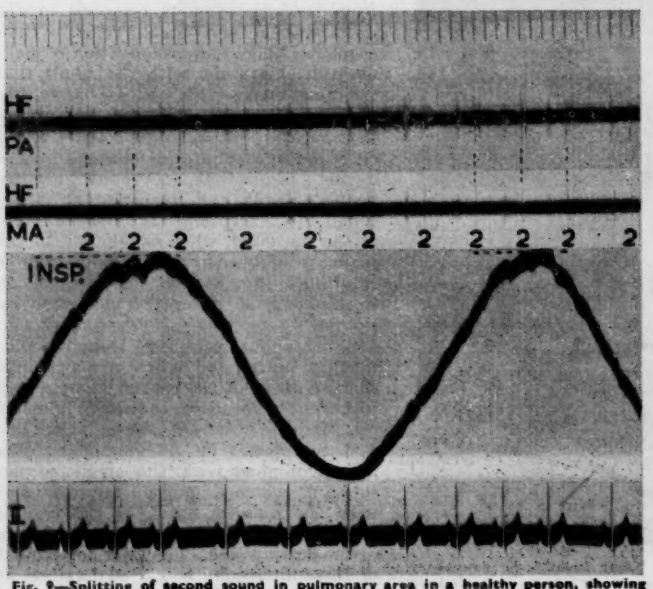


Fig. 9—Splitting of second sound in pulmonary area in a healthy person, showing relation to height of inspiration.

Pulmonary stenosis causes prolongation of right ventricular systole and mechanical delay in closure of the pulmonary valve, which may be very great, exceeding 0·10 sec. in the expiratory phase of respiration in severe cases. The late closure of the pulmonary valve can be appreciated by auscultation as the soft second component of a widely split second sound in cases of either mild or moderately severe pulmonary stenosis (figs. 6 and 12). In very severe pulmonary stenosis the late pulmonary closure is very faint and cannot always be heard, though it can often be recorded when inaudible. Here occasionally no pulmonary component can be recorded, but prolongation of right ventricular systole is shown in synchronous phonocardiograms by con-

tinuation of the systolic murmur in the pulmonary area past the aortic component of the second sound at the apex.

Auscultation for the wide splitting must not be confined to the pulmonary area, where the loud systolic murmur may obscure the aortic component. Both components can usually be heard between the mitral and pulmonary areas. Late closure of the pulmonary valve is found even with mild pulmonary stenosis; this diagnosis may be suspected on hearing the combination of an early systolic sound and wide splitting of the second sound in the pulmonary area (fig. 6), even in the absence of a loud systolic murmur and evidence (clinical or electrocardiographic) of right ventricular hypertrophy.

In severe pulmonary stenosis with overriding of the aorta (Fallot's tetralogy) much of the output from the right ventricle is diverted into the aorta, with the result that the pulmonary flow is less than in pure pulmonary stenosis; usually no late pulmonary component can be heard or recorded, probably because the diastolic pressure in the pulmonary artery is too low to shut the valve firmly enough to be audible. Exceptionally, splitting of the second sound due to a late pulmonary component has been heard and recorded in Fallot's tetralogy, but the pulmonary flow and pressures have been much greater than usual. After valvotomy for Fallot's tetralogy and improvement in pulmonary flow the late pulmonary component may appear for the first time. The presence of the pulmonary sound usually means that the pulmonary flow is adequate and Blalock's operation is contra-indicated, but pulmonary valvotomy may be necessary to relieve the strain on the right ventricle.

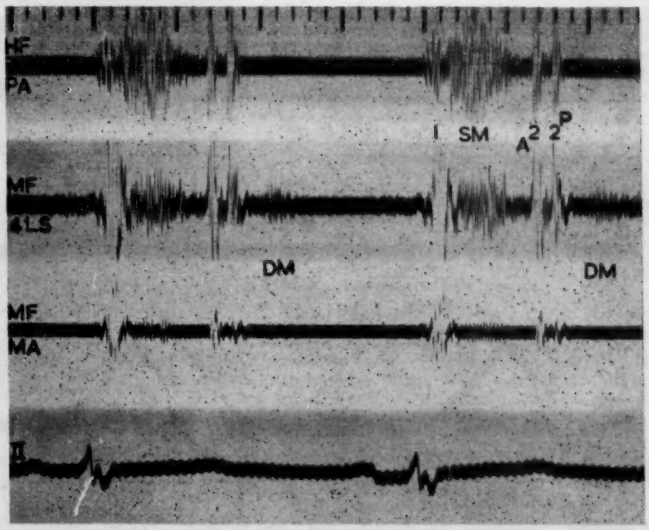


Fig. 11—Wide splitting (0·05 sec) of second heart sound in atrial septal defect with little further increase on inspiration.

Later pulmonary component is transmitted to apex although there was no pulmonary hypertension. Usual systolic and diastolic (DM) murmurs are shown.

Wide splitting of the second heart sound is also caused by early closure of the aortic valve, as in mitral incompetence, where the diminished resistance to left ventricular outflow causes shortening of left ventricular systole (Brigden and Leathem 1953). The normal order of closure of the aortic valve before the pulmonary is maintained, with the result that the splitting increases during inspiration.

Great delay in closure of the aortic valve causes wide splitting of the second heart sound in the pulmonary area, but the normal order of valve closure is reversed. The closure of the pulmonary valve before the aortic was shown by Wolferth and Margolies (1935) by graphic recordings in patients with the "common" type of bundle-branch block, so-called in 1935, enabling them to decide that the left bundle was affected when the electrocardiographic pattern was still under discussion.

We have found that the precedence of pulmonary valve closure can be diagnosed clinically in most cases because the delay of the pulmonary element during inspiration *decreases* the width of the splitting, which is now greatest in expiration. The commonest cause of this paradoxical splitting of the second sound is the electrical delay in closure of the aortic valve from left bundle-branch block (fig. 13). This happens also from mechanical delay in closure of the aortic valve from stenosis, but is more difficult to appreciate clinically since the relatively early pulmonary component may be lost in the systolic murmur.

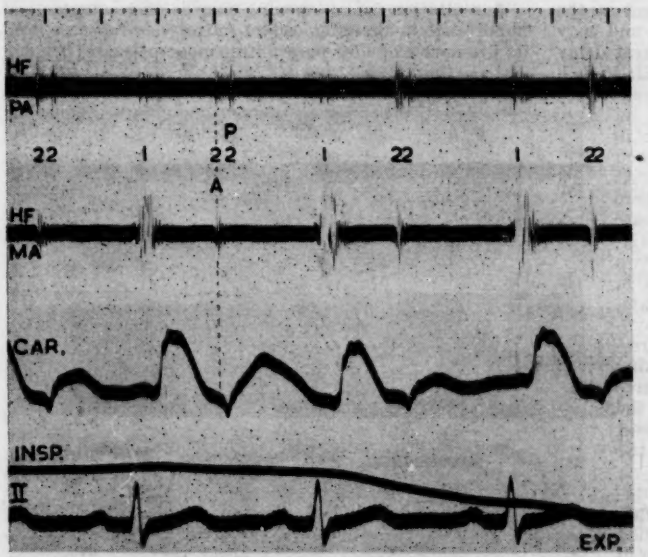


Fig. 10—Splitting of second heart sound in pulmonary area, wide during inspiration and narrow during expiration, in a healthy person.

Earlier component in pulmonary area is synchronous with single second sound at apex and dicrotic notch of carotid tracing (with delay of 0·03 sec.) and is therefore due to closure of aortic valve. Later component is confined to pulmonary area and must be due to closure of pulmonary valve; delay in this component causes increase in width of splitting during inspiration.

Absent Pulmonary Component of Second Sound

In healthy children and young adults inaudibility of the pulmonary component, giving a single second sound in the pulmo-

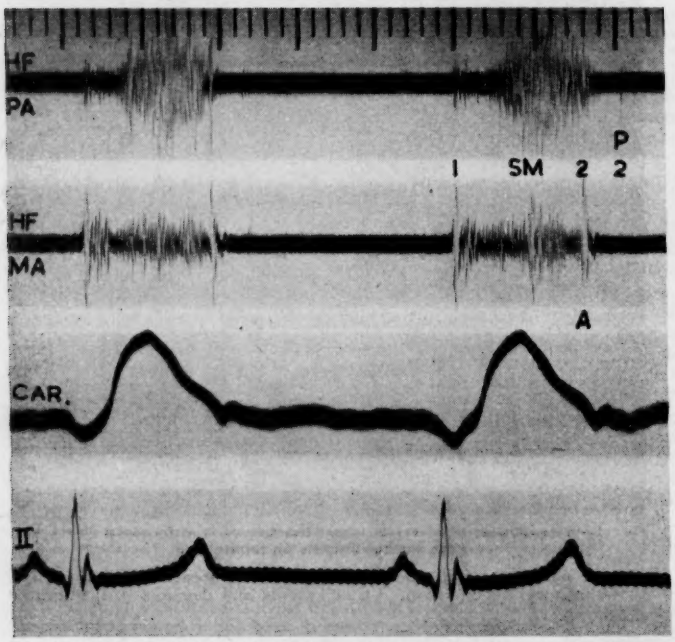


Fig. 12—Very wide splitting (0·09 sec.) of second heart sound, with small late pulmonary component due to moderately severe pulmonary stenosis.

nary area during inspiration is most uncommon ; but this finding is more common in older adults and is usually due to poor conduction of heart sounds because of emphysema.

The single second sound in very severe pulmonary stenosis and, especially, in Fallot's tetralogy has been described and is also found in pulmonary atresia.

In pulmonary hypertension the second sound in the pulmonary area is very loud, often palpable, and may appear single on auscultation unless there is great delay of the pulmonary component from right bundle-branch block. The normal inspiratory delay of the pulmonary component is usually lessened, but an additional factor may be inability of the ear to separate a faint sound (aortic component) followed by a very loud one (pulmonary component). At the lower left sternal edge and mitral area, where the relative intensities of these two sounds are similar, it may be easier to detect slight splitting.

In occasional cases no separation of the two components of the second sound can be heard in any area or even be seen on the phonocardiogram, especially in patients with Eisenmenger's syndrome, where the pulmonary and systemic pressures are equal and the two ventricles are working under the same conditions. However, the selective increase in loudness of the second sound in the pulmonary area in these cases will strongly suggest that an accentuated pulmonary component is the cause.

In certain circumstances a loud basal systolic murmur may continue beyond the pulmonary component of the second sound and obscure it. This may happen in aortic stenosis, when the normal order of valve closure is reversed, as mentioned earlier.

Absent Aortic Component of Second Heart Sound

It has already been pointed out that the second heart sound at the aortic and mitral areas, especially the latter, is solely due to closure of the aortic valve (except in special circumstances which have been described). The aortic is the major component, and its complete absence is extremely rare, being almost confined to cases of very severe aortic stenosis and incompetence.

In many patients with aortic stenosis the sound of aortic valve closure is clear, especially at the apex, but in severe cases it may be reduced in intensity. The systolic murmur is a mid-systolic ejection murmur finishing before its second sound (Leatham 1951) and in no way obscures this sound.

In mitral incompetence the systolic murmur is pansystolic and extends right up to the aortic component of the second sound, which is obscured at the mitral area, if the murmur is loud (fig. 15), but is clearly heard in all the other areas. Thus the second sound at the apex is more likely to be inaudible in mitral incompetence than in aortic stenosis.

Similarly, the murmur of ventricular septal defect (without pulmonary hypertension) is pansystolic and extends up to and may obscure the aortic component at the lower left sternal edge, although both components of the second sound are clear at the pulmonary area, where the murmur is faint. Occasionally the systolic murmur of ventricular septal defect is loud in the pulmonary area ; this may cause difficulty in diagnosis because the aortic component cannot be detected at the base and the second sound may appear single.

Differentiation of Splitting of Second Heart Sound from Opening Snap of Mitral Valve and Third Heart Sound

Opening Snap

Auscultation for an opening snap is of great practical importance in the diagnosis of mitral-valve disease, and its presence excludes *pure* mitral incompetence (Brigden and Leatham 1953).

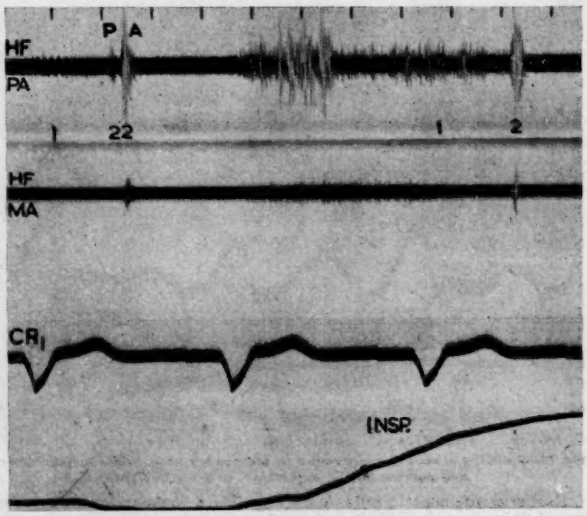


Fig. 13—Reversal of normal order of valve closure due to delay in aortic component from left bundle-branch block.

Splitting of second heart sound in pulmonary area is wide during expiration and disappears on inspiration because of delay of earlier pulmonary component, making it fuse with aortic component.

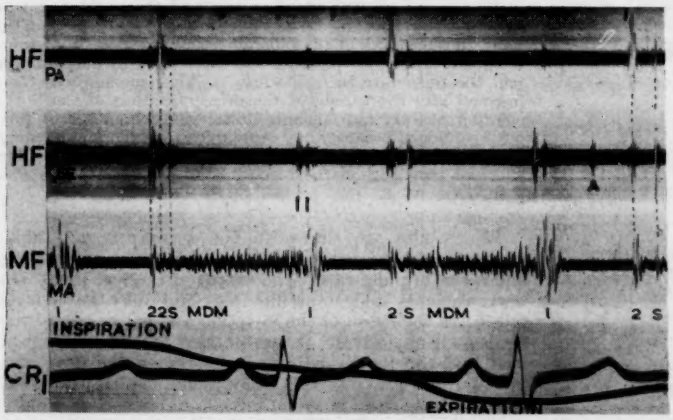


Fig. 14—Opening snap (S) of mitral stenosis is to be distinguished from pulmonary component of a split second sound.

Snap is a little later than pulmonary component (except with right bundle-branch block) and is loudest at lower left sternal edge and internal to apex. During inspiration both aortic and pulmonary components and the snap can be heard in pulmonary area. Pulmonary sound is transmitted to mitral area, indicating pulmonary hypertension, and usual mitral diastolic murmur (MDM) is shown. First sound is split, and reversal of normal order of valve closure, due to mitral delay, is suggested by dominance of first component at tricuspid area, and of second at mitral area. Systolic sound in tracing from lower left sternal edge is an artefact (A).

An opening snap can be heard, if sought for, in almost every case of dominant mitral stenosis; it was recorded in 32 of 33 patients with mitral stenosis (Mounsey 1953). The opening snap of the mitral valve may be easily mistaken for the second (pulmonary) component of a split second sound because it occurs soon after the aortic component (usually less than 0·10 sec.) and is high-pitched and sharp, and best heard with the diaphragm type of stethoscope. The snap is maximal at the lower left sternal edge, inside or above the apex, and often well conducted everywhere. The pulmonary component of the second sound is loudest in the second and third left spaces, and is absent at the apex except in pulmonary hypertension. The snap is maximal during expiration, whereas the pulmonary sound is usually only obvious as a separate sound during inspiration.

There is no difficulty in differentiating these sounds in most cases of uncomplicated mitral stenosis when the second heart sound is normal and its two components

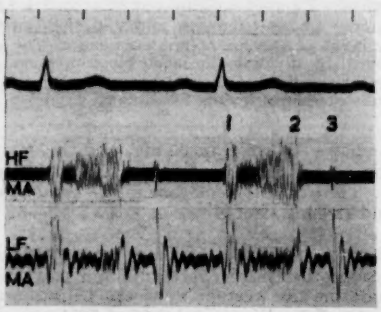


Fig. 15—Pansystolic third heart sound in mitral incompetence.

This sound is loudest at apex and low-pitched, and is shown in exaggerated form in low-frequency phonocardiogram (LF). Second heart sound (aortic component) could not be heard at apex because it was absorbed in long systolic murmur, shown in high-frequency tracing, which resembles findings of auscultation. Both components of second sound could be clearly heard at pulmonary area.

are close together in the expiratory phase of respiration. But, when the pulmonary component is late from bundle-branch block and accentuated from pulmonary hypertension, it may be well transmitted to all areas and simulate the opening snap. The only certain method of differentiation is to hear all three sounds—aortic, pulmonary, and the snap. During expiration two sounds can often be heard in the pulmonary area, and during inspiration the first of them splits into aortic and pulmonary components, and the later sound is the mitral snap (fig. 14).

Third Sound

The third heart sound (fig. 15) should seldom cause difficulty in differentiation from the pulmonary component of the second sound. The third sound is loudest at the apex; it is later (about 0·15 sec. after the onset of the aortic component of the second sound) and is much lower pitched and best heard with the bell type of stethoscope. Its differentiation from an opening snap is important because its significance is completely different, and in mitral-valve disease it indicates incompetence rather than stenosis.

The detection of these signs requires concentration, practice, and appreciation of their importance. When diligently sought they can be elicited by simple auscultation at the bedside and do not require elaborate instrumental aid.

Summary

Splitting of the first heart sound at the mitral and tricuspid areas can be heard in most normal subjects. The interval between the two sounds is slight and evidence is given to show that it is due to closure of the mitral valve before the tricuspid.

The auscultatory impression of wide splitting of the first heart sound at the base of the heart is due to the addition of an extra sound in early systole during ejection of blood into the pulmonary artery or aorta, and indicates dilatation of one of these great vessels.

Splitting of the second heart sound in the pulmonary area can be heard in most normal subjects during inspiration and is due to delay in closure of the pulmonary valve. Abnormally wide splitting may be due to delay in the pulmonary component, and this is caused by right bundle-branch block, increased right-sided flow from left-to-right shunt, or pulmonary stenosis. In left bundle-branch block the order of valve closure is reversed and the splitting is paradoxical, decreasing on inspiration.

Absence of the pulmonary or aortic component of the second sound is discussed. The differentiation is given of the pulmonary component of the second sound from the opening snap of the mitral valve and the third heart sound.

I am indebted to the physicians to the National Heart Hospital and to Sir John Parkinson for much help and encouragement, and permission to see their cases. The opinions reached in this paper are based on six years' clinical and phonocardiographic experiences at the London Hospital and at the National Heart Hospital, and I gratefully acknowledge much stimulation and help from Dr. William Evans and Dr. Paul Wood, and from registrars and technicians. I am grateful to the editor of the *British Heart Journal* for permission to reproduce figs. 1, 3, 4, and 7.

References overleaf

CHLORPROMAZINE

A STUDY OF ITS ACTION ON THE CIRCULATION IN MAN

C. A. FOSTER
M.B. Lond., F.F.A. R.C.S., D.A.
REGISTRAR, DEPARTMENT OF ANÆSTHETICS, ST. THOMAS'S HOSPITAL, LONDON

E. J. O'MULLANE
M.B. N.U.I., F.F.A. R.C.S., D.A.
SENIOR ANÆSTHETIC REGISTRAR, HILLINGDON COUNTY HOSPITAL, MIDDLESEX; LATE REGISTRAR, DEPARTMENT OF ANÆSTHETICS, ST. THOMAS'S HOSPITAL

P. GASKELL
M.D. Western Ontario
LATE OF THE SHERRINGTON SCHOOL OF PHYSIOLOGY, ST. THOMAS'S HOSPITAL MEDICAL SCHOOL

H. C. CHURCHILL-DAVIDSON
M.D. Camb., D.A.
WILL EDMONDS RESEARCH FELLOW, ROYAL COLLEGE OF PHYSICIANS (ATTACHED TO THE DEPARTMENT OF ANÆSTHETICS, ST. THOMAS'S HOSPITAL)

CHLORPROMAZINE (dimethylaminopropyl - N - chlorophenothiazine hydrochloride) (M. & B. 2378 or 'Largactil'), in combination with pethidine and promethazine, has been used extensively on the Continent and in Indo-China as a method of reducing body metabolism and guarding against the development of the "shock syndrome" (Laborit and Huguenard 1951, Nicol et al. 1953). Pharmacological studies in animals by Courvoisier et al. (1953) and the work of Dundee et al. (1953) suggest that the protective action against shock in man may be mainly due to the effect of chlorpromazine on the peripheral blood-vessels and autonomic ganglia. This study was undertaken to determine the action of chlorpromazine on the circulation in man.

Effect on the Circulation

ACTION ON THE HEART-RATE AND BLOOD-PRESSURE

Method

The subjects were 10 conscious male volunteers, aged 25–54 (average 42), and 12 anæsthetised patients, aged 21–72 (average 50). The patients received no premedication. Room-temperature varied in different experiments between 20° and 27°C. In any given experiment it was maintained constant to ±1°C.

An intravenous drip of saline or 5% dextrose solution was set up. After the subjects had been at rest for at least half an hour, initial values of the blood-pressure and heart-rate were recorded. The blood-pressure was determined by auscultation and the pulse-rate by palpation. Chlorpromazine was then injected into the tubing of the drip (injections of the 2·5% solution directly into an antecubital vein were tried at first but abandoned because they caused venospasm and reddening of the skin). The dose of chlorpromazine was 5–50 mg. The effect of the drug on the blood-pressure and pulse-rate was then observed.

Results

The results are shown in the accompanying table. Chlorpromazine usually caused a fall in blood-pressure and a rise in pulse-rate. The extent of these changes was very variable and unpredictable, and may have been related to the speed of the injection and to the age of the subject. Subjectively, it was noticed that the feeling of heat and the tachycardia were less when the drug was injected slowly. On the other hand, the injection of 25 mg. of the drug in 20 ml. of saline solution as rapidly as possible through a 16-gauge needle in an anæsthetised patient caused a momentary fall of systolic pressure of as much as 50%. As for the effect of age, it was noticed that quite small doses of 5–10 mg. reduced the blood-pressure by as much as 25% in patients over 60. The hypotension was postural, had no apparent ill effects, and passed off in 4–6 hours.

Chlorpromazine caused a feeling of lethargy for 6–8 hours after its administration. There was also bilateral ptosis and meiosis, though this was not a true Horner's syndrome, for the face was still capable of sweating.

EFFECT OF INTRAVENOUS CHLORPROMAZINE ON THE PULSE-RATE AND ARTERIAL BLOOD-PRESSURE

Subjects	Dose (mg.)	Pulse-rate (% change)	Arterial blood-pressure (% change)	
			Systolic	Diastolic
10 conscious (16 injections)	25	+8·5 (+25 to −23)	−14·5 (+16 to −49)	−16·5 (+14 to −60)
16 anæsthetised (27 injections)	5–25 (average 15)	+3·9 (+29 to −23)	−12·7 (+10 to −33)	−8·5 (+33 to −43)

ACTION ON THE LIMB BLOOD-VESSELS

The action of chlorpromazine on the circulations in hand, forearm, and calf was also studied in the 10 conscious subjects during the experiments described above.

Method

The hand, forearm, or calf blood-flow was measured by venous-occlusion plethysmography (Barcroft and Swan 1953), using water-filled plethysmographs at 35°C for the hands and air-filled ones for the forearm and calf. Blood-flow was expressed in ml. per 100 ml. of limb per minute. The resistance was obtained by dividing the mean blood-pressure (diastolic pressure plus one-third of the difference between the diastolic and systolic pressures) by the blood-flow.

Results

Fig. 1 shows the effect of 25 mg. of intravenous chlorpromazine on the circulation in the hands of 8 conscious subjects. The average blood-flow in the hand was 5·9 ml. before and 22·9 ml. after injection of the drug—an increase of 284%.

Fig. 2 shows the effect of the same intravenous dose on the circulation in the forearms and calves. Before chlorpromazine the average flow was 1·8 ml. and afterwards it was 3·1 ml.—an increase of 72%.

These results show conclusively that chlorpromazine causes vasodilatation in the limbs. This is greatest in the hands, where vasoconstrictor tone is the strongest.

SITE OF VASODILATOR ACTION

The vasodilatation might have been due to the action of chlorpromazine on the vessels themselves, to a release of

DR. LEATHAM: REFERENCES

Barber, J. M., Magidson, O., Wood, P. (1950) *Brit. Heart J.* **12**, 277.
Brigden, W., Leatham, A. (1953) *Ibid*, **15**, 55.
Cossio, P., Borcosnky, I. (1943) *Rev. argent. Cardiol.* **10**, 162.
Dock, W. (1933) *Arch. intern. Med.* **51**, 737.
Katz, L. N. (1925) *Amer. J. Physiol.* **72**, 655.
Leatham, A. (1951) *Brit. Heart J.* **13**, 153.
— (1952) *Brit. med. Bull.* **8**, 333.
— Towers, M. (1951) *Brit. Heart J.* **13**, 575.
— Vogelpoel, L. (1954) *Ibid*, **16**, 21.
Lian, C., Welti, J. J. (1937) *Arch. Mal. Cœur*, **30**, 947.
Mounsey, P. (1953) *Brit. Heart J.* **15**, 135.
Orias, O., Braun-Menéndez, E. (1939) The Heart-Sounds in Normal and Pathological Conditions. London.
Petit, A. (1902) *In* Charcot, Bouchard, and Brissaud's Traité de Médecine. 2nd ed., Paris; vol. viii.
Potain, C. (1866) *Bull. Soc. Méd. Hôp. Paris*, **3**, 138.
Wiggers, C. J., Dean, A. L. (1917) *Amer. J. Physiol.* **42**, 476.
Wolferth, C. C., Margolies, A. (1935) *Amer. Heart J.* **10**, 425.

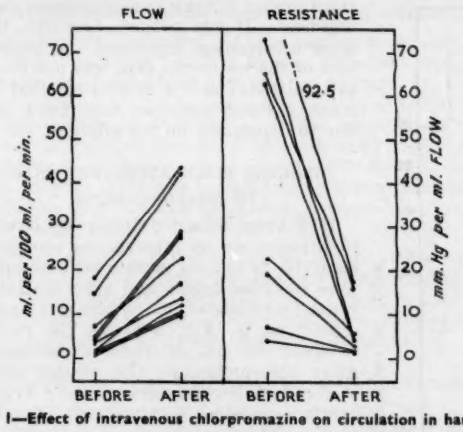


Fig. 1—Effect of intravenous chlorpromazine on circulation in hands.

vasoconstrictor tone (the result of an inhibitory action of the drug on the vasomotor centre, the sympathetic ganglia, or nerve-endings), or to a combination of two or more of these actions.

To see if the drug had a *peripheral* action, its effect on the blood-flow in the hand was recorded during infusions into the brachial artery.

Method

Experiments were performed on 4 conscious subjects. Saline solution was infused into the brachial artery throughout each experiment at the rate of 4 ml. per minute. Blood-flow in both hands was recorded for an initial period. $^{1}/_{80}$–$^{1}/_{6}$ mg. of chlorpromazine per minute was then infused intra-arterially, together with the saline solution, for five minutes. Its effect on the circulation in the hands was recorded. To avoid errors due to spontaneous fluctuations in hand blood-flow, the blood-flow in the test hand was divided by that in the control hand. A rise in this ratio signified a vasodilator action of the drug in the test hand.

Results

Fig. 3 shows the results of 10 injections in 4 subjects. The average blood-flow in the test hand was 8 ml. before, and 15 ml. after, chlorpromazine—an increase of about 100%. The change in the ratio, however, indicated a true increase in flow of only about 50%.

DISCUSSION

These experiments show conclusively that chlorpromazine had a local vasodilator action on the blood-vessels in the hand. This might have been due to blocking of the sympathetic vasoconstrictor nerve impulses at the endings in the vessel walls or to direct action of the drug on the arterial muscle, or to a combination of both these actions.

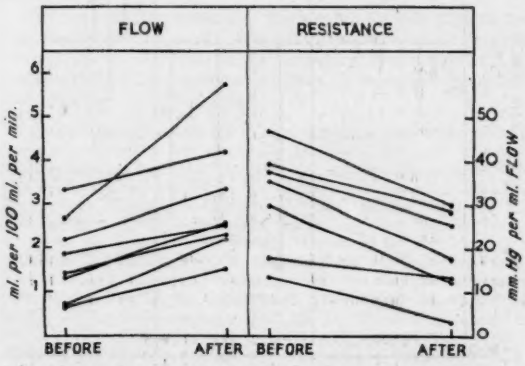


Fig. 2—Effect of intravenous chlorpromazine on circulation in forearms and calves.

It is interesting to note that the presence of chlorpromazine in the general circulation had a much more powerful vasodilator action than that caused by its local action alone. It will be recalled that intravenous infusions caused an increase in flow of 284%, whereas the increase was less than 100% after these intra-arterial infusions. This suggests that in addition to its peripheral effect chlorpromazine has a central inhibitory action on vasomotor tone. This action might be on the vasomotor centre or on the sympathetic ganglia, or on both these parts of the autonomic nervous system.

The above conclusion is valid provided that chlorpromazine caused similar *local* vasodilatations in the hand after the intravenous and intra-arterial infusions—i.e., the doses used were comparable and evenly distributed throughout the hand. It is estimated that $^{1}/_{60}$ of the cardiac output flowed through the brachial artery beyond the point of insertion of the intra-arterial needle. Since, then, the intravenous dose was 25 mg., about 0·5 mg. would have reached the forearm and hand. The intra-arterial dose ranged from $^{5}/_{80}$ mg. to $^{5}/_{6}$ mg., averaging 0·5 mg. per 5-minute period. It appears unlikely that the uneven distribution of the drug in the hand during the intra-arterial infusions could cause the gross difference between the 100% increase on intra-arterial infusion and the 284% increase in blood-flow on intravenous injection, which therefore makes it necessary to postulate a central action of the drug.

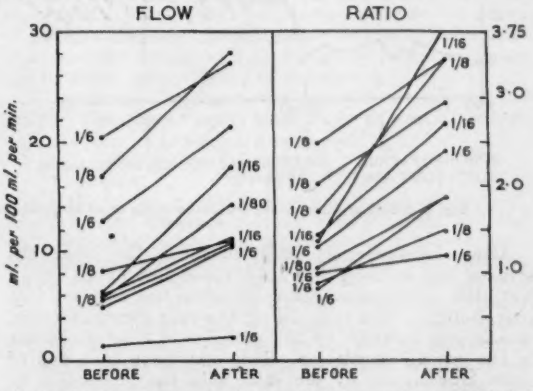


Fig. 3—Effect of intra-arterial infusion of chlorpromazine on circulation in hands (dose in mg. per min. given in fractions to facilitate dealing with dilutions).

Further Experiments on the Cause of the Vasodilatation

In 4 experiments on conscious subjects, the effect of intravenous doses of 25–50 mg. of chlorpromazine on the hand blood-flow was recorded after blocking the brachial plexus on one side to remove vasoconstrictor tone. Macintosh and Mushin's (1947) modification of Patrick's technique was used.

After complete muscular paralysis and the release of all vasoconstrictor tone, blood-flow in the hand averaged 18·6 ml. After the injection of chlorpromazine, however, it rose still further to 25·2 ml. (fig. 4). This suggests that the local action of chlorpromazine was in part due to direct action on the arterial muscle.

COLD-CONSTRICTOR TEST

In normal subjects the application of ice to the forehead or chest for one or two minutes causes strong vasoconstriction in the hand. A few experiments were done to see if chlorpromazine affected this response. Blood-flows in the hand of the same 4 conscious subjects were studied: (*a*) after $^{5}/_{8}$–$^{5}/_{6}$ mg. of chlorpromazine intra-arterially; and (*b*) after 25 mg. intravenously (comparable doses).

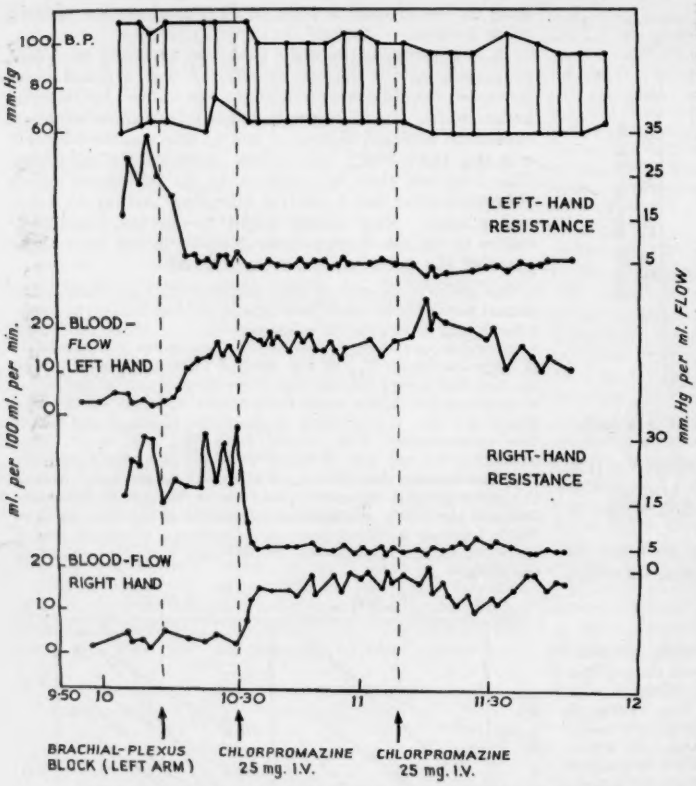


Fig. 4—Effect of intravenous chlorpromazine after brachial plexus block.

After intra-arterial chlorpromazine the cold-constrictor test reduced the hand blood-flow by 25–80%; but after intravenous chlorpromazine the decrease was only 5–10%. The response to the cold-constrictor test was greatly reduced by the presence of chlorpromazine in the general circulation. This may have been due to some interference by the drug with the production or transmission of tonic vasoconstrictor nerve impulses. It was noticed, however, that after intravenous injections the application of the ice to the skin was not nearly so unpleasant and it is possible that the much reduced response may have been due to depression on the afferent side.

GENERAL CIRCULATORY RESPONSES TO NORADRENALINE

In 3 anæsthetised patients the circulatory responses to intravenous noradrenaline (16–24 μg. per minute for 5 minutes) were recorded before and after the intravenous administration of chlorpromazine (25–50 mg.). Fig. 5 shows the results obtained in one of these experiments. After chlorpromazine the pressor effect of noradrenaline was diminished; bradycardia was abolished or replaced by tachycardia; vasoconstriction in the calf appeared to be greater (24·1% before, and 33% after, chlorpromazine).

The bradycardia induced by noradrenaline is believed to be due to the fact that direct excitation of the pacemaker is masked by vagal inhibition caused by stimulation of the baroceptors by the raised blood-pressure. This bradycardia after chlorpromazine may have been absent because the rise in blood-pressure was less, so that the inhibitory action of the baroceptors was no longer strong enough to suppress the excitatory action of noradrenaline on the pacemaker. In addition, the drug may have interfered with the production of vagal inhibitory impulses, or with their transmission to the pacemaker.

An electrocardiograph monitor was used in these experiments and alterations in the form of the T wave were noted during the second noradrenaline infusion in one subject. These alterations may have been due more to the chlorpromazine than to the noradrenaline (Dobkin et al. 1954).

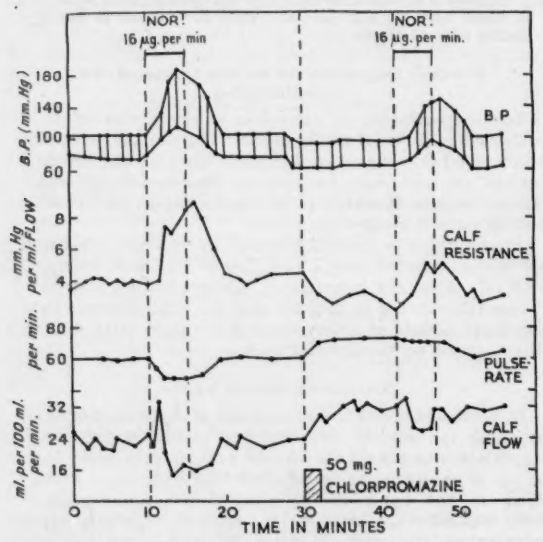


Fig. 5—Response to intravenous noradrenaline before and after intravenous chlorpromazine.

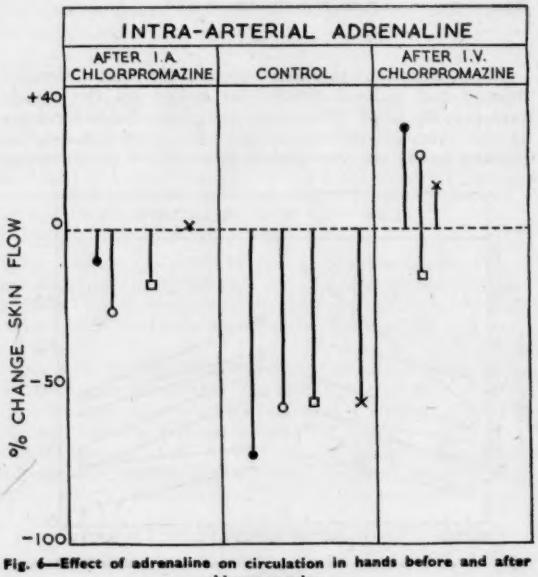


Fig. 6—Effect of adrenaline on circulation in hands before and after chlorpromazine.

LOCAL RESPONSE OF HAND VESSELS TO NORADRENALINE

Intra-arterial infusions of $^1/_{20}$ μg. per minute of noradrenaline for 5 minutes in two conscious subjects reduced the hand blood-flow on the average by 40%. After intra-arterial infusions of $^1/_8$ mg. per minute of chlorpromazine for 5 minutes, similar infusions of noradrenaline reduced the hand blood-flow by only 19%. The change in the ratio was only from 28 to 25%, however, so that there was no definite evidence that chlorpromazine had blocked the action of noradrenaline on the vessels.

A dose of 1·0 μg. per minute of noradrenaline for 5 minutes—i.e., 20 times the previous dose—caused an 85% reduction of the hand blood-flow before, and a 79% reduction after, $^1/_{16}$ mg. of chlorpromazine. The change in the ratio from 82 to 85% was not significant.

RESPONSE OF THE HAND VESSELS TO ADRENALINE

To test the effect of chlorpromazine on the local action of adrenaline in the hand vessels, the action of intra-arterial infusions of adrenaline on the blood-flow in the hand was recorded before and after both intra-arterial and intravenous infusions of chlorpromazine. All intra-arterial adrenaline infusions were at the rate of 0·1 μg. per minute for 5 minutes.

The results are shown in fig. 6. It will be seen that intra-arterial chlorpromazine reduced the vasoconstrictor action of adrenaline and that intravenous chlorpromazine reversed it.

As far as we are aware these experiments demonstrate for the first time in man the reversal of the action of adrenaline by another drug. Further work is needed to explain why this occurred only after intravenous chlorpromazine.

From the practical standpoint, however, it would appear useless, if not dangerous, to treat a case of prolonged hypotension following chlorpromazine with adrenaline. In these circumstances noradrenaline in larger doses than those normally used might be of value.

Summary

Chlorpromazine has variable effects on the blood-pressure and pulse-rate, but it usually decreases the blood-pressure and increases the pulse-rate.

Chlorpromazine has a powerful vasodilator action on the vessels in the limbs (hand, forearm, calf). Its vasodilator action on the hand is due to both central and local effects.

Chlorpromazine reduces the response of the blood-vessels in the hand to the cold-constrictor test.

After chlorpromazine, noradrenaline has less pressor action and no longer causes bradycardia.

Chlorpromazine reversed the action of adrenaline on the vessels of the hand. The use of noradrenaline, rather than that of adrenaline, is therefore recommended to restore the blood-pressure in cases of excessive hypotension due to chlorpromazine.

We should like to thank all the subjects who took part in these experiments, and especially Dr. D. C. Hughes. We also wish to thank Prof. H. Barcroft for his encouragement, for the use of his laboratory in the Sherrington School of Physiology at St. Thomas's Hospital Medical School, and for his assistance in the preparation of the paper; the department of physical medicine, St. Thomas's Hospital, for the loan of a portable plethysmograph; the staff of the surgical unit, St. Thomas's Hospital, under whose care the patients were admitted; Mr. R. K. Greenwood who helped us to obtain their willing coöperation; Dr. M. D. Nosworthy and Dr. W. D. Wylie for their advice and encouragement; Messrs. May & Baker for supplies of 'Largactil'; and Miss J. F. Davenport for preparation of the figures.

References at foot of next column

THE "LYTIC COCKTAIL"
OBSERVATIONS ON SURGICAL PATIENTS

RALPH SHACKMAN, M.B. Lond., F.R.C.S.
SENIOR LECTURER IN SURGERY

F. G. WOOD-SMITH, M.B. Camb., F.F.A. R.C.S., D.A.
LECTURER IN ANÆSTHESIA

I. G. GRABER, M.D. New York, F.R.C.S.
SENIOR REGISTRAR, DEPARTMENT OF SURGERY

D. G. MELROSE, M.A., B.M. Oxfd
ASSISTANT LECTURER IN SURGERY

R. B. LYNN, Ch.M., M.D. Ontario, F.R.C.S.
ASSISTANT LECTURER IN SURGERY
POSTGRADUATE MEDICAL SCHOOL OF LONDON, HAMMERSMITH HOSPITAL

THE "lytic cocktail," a combination of pethidine, promethazine ('Phenergan'), and chlorpromazine ('Largactil'), is said to have a specific action on the thermoregulatory mechanism and the autonomic nervous system in man (Laborit et al. 1952); a fall of body-temperature and oxygen uptake is said to follow its administration (Dundee et al. 1953). In view of the advantages claimed (Laborit and Huguenard 1951, 1953) for this combination of drugs, it was decided to administer the "lytic cocktail" to a small, specially selected group of patients about to undergo major urological operations and to make clinical and physiological observations on the patients' metabolism and circulation.

17 patients (15 males and 2 females) were given the drugs. Their ages ranged from 28 to 84 years (average 64); 14 were over 60 and 8 were over 70.

Methods

All the patients received promethazine 50 mg. by mouth on the previous evening and pethidine 100 mg. with promethazine 50 mg. intramuscularly two to three hours before operation. At the peak of the deep sedation which followed this premedication, a cardiac catheter was passed into the right auricle of the heart under fluoroscopic control and with continuous electrocardiographic monitoring. Oxygen uptake was measured on a Benedict-Roth spirometer and mixed venous-blood samples were withdrawn from the cardiac catheter for determinations of oxygen content (Van Slyke and Neil 1924). The oxygen content of arterial blood was determined in half the cases on samples withdrawn by arterial puncture and was deduced in the remainder from the capacity of mixed venous blood (Douglas and Edholm 1949). Peripheral-pulse volumes were measured by a digital plethysmograph (Melrose et al. 1954), blood-pressures by sphygmomanometry, and body-temperatures by a mercury thermometer or copper-constantin thermocouple in the rectum.

After "primary" data had been obtained the patients were given the "lytic cocktail" (pethidine 100 mg., promethazine 50 mg., and chlorpromazine 100 mg.) in an intravenous infusion of 200 ml. of normal saline. When the anæsthetist concluded from clinical observations

DR. FOSTER AND OTHERS: REFERENCES

Barcroft, H., Swan, H. J. C. (1953) Sympathetic Control of Human Blood Vessels. London.
Courvoisier, S., Fournel, J., Ducrot, R., Kolsky, M., Koetschet, P. (1953) *Arch. int. Pharmacodyn.* **92**, 305.
Dobkin, A. B., Gilbert, R. G. B., Lamoureux, L. (1954) *Anæsthesia*, **9**, 157.
Dundee, J. W., Gray, T. C., Mesham, P. R. (1953) *Brit. med. J.* ii, 1237.
Laborit, H., Huguenard, P. (1951) *Pr. méd.* **59**, 1329.
Macintosh, R. R., Mushin, W. W. (1947) Local Anæsthesia. Brachial Plexus. Oxford.
Nicol, Mattei, Brun-Buisson, François, Jaffry, Lagneau. (1953) *Thérapie*, **8**, 39.

(vide infra) that the effects of the drugs were manifest—usually within thirty minutes of the start of the infusion—the determinations were repeated and anæsthesia was induced with nitrous oxide: a 5 : 2 or 6 : 2 nitrous-oxide/oxygen mixture was administered through a cuffed endotracheal tube and was supplemented, when necessary, by small intravenous doses of thiopentone and gallamine triethiodide ('Flaxedil').

Respiratory tracings and arteriovenous-oxygen differences were obtained during the period of general anæsthesia and surgical operation; blood-pressure, pulse-rate, peripheral-pulse volume, and body-temperature were recorded at intervals of ten to fifteen minutes throughout the whole procedure.

Values for cardiac output and calculated systemic vascular resistance were determined respectively by the Fick (1870) equation and the formula of Aperia (1940) in 15 patients; peripheral-pulse volumes were observed in 11 patients; and body-temperatures in 8.

The patients were clad in flannel operation gowns and were covered with theatre-trolley blankets until the operation began. At no time was any attempt made to cool the patients by exposure.

TABLE I—OXYGEN UPTAKE, ARTERIOVENOUS-OXYGEN DIFFERENCE, AND CARDIAC OUTPUT

Case no.	Age	Ht. (in.)	Wt. (lb.)	Calculated O_2 consn. (c.cm. per min.)	O_2 consn. (c.cm. per min.)*	A-V diff. (vols. %)*	Cardiac output (litres per min.)*
1	76	64	162	214	207 240 ..	3·30 3·44 3·44	6·3 7·0 ..
2	68	68	125	201	207 223 ..	4·74 2·94 2·94	4·38 7·6 ..
3	77	69	147	217	207 207 ..	5·51 3·10 2·90	3·76 6·7 ..
4	43	64	143	219	236 214 ..	2·22 1·83 2·35	10·6 11·7 ..
5	50	67	160	238	245 203 ..	2·99 1·39 3·28	8·2 14·6 ..
6	84	66	146	213	214 268 ..	3·89 3·21 3·42	5·5 8·45 ..
7	78	65	142	204	207 203 ..	3·44 5·12 3·52	6·0 4·0 ..
8	72	64	128	194	187 200 ..	2·62 1·62 2·63	7·15 12·3 ..
9	62	62	110	167	202 174 ..	2·72 3·03 2·68	7·85 5·75 ..
10	66	67	173	228	261 268 ..	3·31 3·46 3·62	7·9 7·7 ..
11	76	66	126	198	232 217 ..	4·12 4·08 4·43	5·65 5·35 ..
12	65	66	116	201	191 178 ..	2·76 2·63 2·64	6·9 6·8 ..
13	62	64	106	181	182 179 ..	2·03 3·63 5·96	5·5 3·68 ..
14	61	66	116	193	203 235 ..	3·53 3·47 4·02	5·75 6·8 ..
15	28	67	162	238	233 227 ..	2·34 2·92 4·54	10·0 7·8 ..

* The three readings in each case are: (*a*) primary values before "lytic cocktail"; (*b*) secondary values during "lytic cocktail"; (*c*) values during nitrous-oxide anæsthesia.

Results

Oxygen Uptake and Respiratory Pattern (table I)

The "primary" values (before administration of the "lytic cocktail") for oxygen uptake compared closely with corresponding basal values calculated from a standard table (Means and Woodwell 1921); in 3 of 15 patients, however (cases 9–11), the "primary" values were 21, 14, and 17% higher. The average of the "primary" values was 214 c.cm. per min.

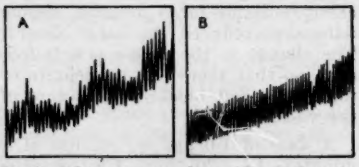


Fig. 1—Spirometry tracings (A) under the "lytic cocktail" and (B) supplemented by nitrous-oxide anæsthesia. The rhythmic respiratory pattern becomes regular under nitrous-oxide anæsthesia.

The "secondary" values (after infusion of the "lytic cocktail") showed that the oxygen uptake had decreased in 4 patients, increased in 7, and remained virtually unchanged in 4. The average over-all oxygen uptake after the infusion was 216 c.cm. per min.—a negligible change.

The respiratory pattern sometimes showed a regular rhythmic variation under the "lytic cocktail" but this variation generally disappeared after administration of the nitrous oxide (fig. 1). The respiratory rate usually decreased during the infusion but commonly increased after administration of the nitrous oxide (fig. 2). When the average respiratory rate is multiplied by the average tidal volume it is seen that the ventilation decreased during the infusion, but under nitrous oxide it returned approximately to the value present at the time of the determination of the "primary" values.

Body-temperature

The body-temperature, measured in the rectum, of 4 of 8 patients so observed remained unchanged throughout the period of observation: in the remaining 4 it fell by an average of 0·5°C. The temperature of the anæsthetic room and operating-theatre averaged 25°C. Axillary temperatures were taken in 2 patients at hourly intervals for four hours after return to the ward; a mild hypothermia (35°C) was observed in one and a mild fever (37·8°C) in the other.

Blood-pressure (table II)

With a single exception (case 14), the "primary" values of the blood-pressures of 15 patients were normal for their ages. After administration of the "lytic cocktail" there was a significant fall of blood-pressure in 12 patients, a slight fall in 1, and no change in 2. When the infusion was rapid and the patient was aged, hypotension was distinct and developed rapidly (fig. 3). Under nitrous-oxide anæsthesia the blood-pressure remained significantly below the "primary" values in 11 of the 15 patients and slightly below in 1; the blood-pressure increased in 3.

Pulse-rate (table II)

The average pulse-rate of the patients at the time of the "primary" determinations was 76 per min. (range 56–120). After infusion of the "lytic cocktail" the pulse-rate increased in 12 of 15 patients and the average rate was then 95 (range 60–120). Under nitrous-oxide anæsthesia there was no consistent alteration in the pulse-rate but when gallamine was administered there was invariably an increase.

Peripheral Circulation

The "primary" digital-pulse volumes varied from patient to patient according to the ambient temperature, age, and circulatory state of the patients. Most of the patients were old and had a reduced peripheral circulation

so that the "primary" pulse volumes were usually small (fig. 4).

Within fifteen minutes of the commencement of the infusion of the "lytic cocktail," the digital-pulse volume increased greatly. This increase was maintained during the infusion, but maximum pulse volumes did not usually develop until nitrous-oxide anæsthesia was complete.

Arteriovenous-oxygen Difference (table I)

The average "primary" arteriovenous-oxygen difference in 15 patients was 3·3 volumes per cent. (range 2·03–5·51). Under the "lytic cocktail" the average "secondary" arteriovenous difference was 3·1 volumes per cent. (range 1·39–5·12). Although this "secondary" average value was virtually the same as the average "primary" value, there was a considerable variation from the average in individual cases.

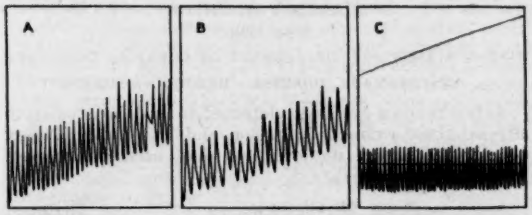


Fig. 2—Spirometry tracings (A) before and (B) during administration of the "lytic cocktail," and (C) supplemented by nitrous-oxide anæsthesia. The respiratory rate is slowed during the infusion of the "lytic cocktail" and is increased under nitrous-oxide anæsthesia.

Oxygen supplementation was used during C. The respiratory tracing is flat and the oxygen uptake is represented by the single rising line.

Under nitrous-oxide anæsthesia, the average arteriovenous-oxygen difference was 3·4 volumes per cent. (range 2·35–5·96). Here too there was a large individual variation from the average.

Cardiac Output (table I)

The average "primary" value for the cardiac output was 6·8 litres per min. (range 3·76–10·6). After the "lytic cocktail" the average value was 7·7 (range 3·68–14·6); it had increased in 8 of 15 patients by an average of 47%, decreased in 4 patients by an average of 28%, and remained unchanged in 3.

Calculated Over-all Systemic Resistance (table II)

The average "primary" over-all systemic resistance, calculated from the "primary" values of the mean blood-pressure and cardiac output, was 1450 dynes sec. cm.$^{-5}$ (range 680–2540). After the "lytic cocktail" the calculated over-all resistance decreased in 13 of 15 patients and increased slightly in the remaining 2; the average resistance in the 15 patients was 1000 dynes sec. cm.$^{-5}$ (range 535–1390)—an average decrease of 31% of the "primary" values.

TABLE II—PULSE-RATE, BLOOD-PRESSURE, AND CALCULATED OVER-ALL RESISTANCE

Case no.	Pulse-rate (per min.)			Blood-pressure (mm. Hg)			Over-all resistance (dynes per sec. per cm.$^{-5}$)	
	A	B	C	A	B	C	A	B
1	72	96	120	130/80	80/50	120/70	1330	745
2	72	90	114	158/120	135/90	115/80	2540	1220
3	76	84	88	140/80	90/55	80/50	2340	875
4	68	84	120	110/70	100/55	100/70	680	535
5	96	120	82	155/100	125/90	100/65	1250	600
6	76	120	120	125/85	120/80	110/70	1530	950
7	72	72	110	150/90	60/40	180/100	1600	1000
8	60	108	132	140/100	145/95	155/95	1340	770
9	120	120	108	135/80	110/65	90/55	1110	1240
10	56	60	96	160/90	140/70	140/80	1270	1090
11	80	90	120	135/75	125/60	130/50	1490	1390
12	76	100	140	135/75	125/65	110/50	1220	1120
13	84	84	72	140/90	65/45	60/40	1670	1200
14	68	72	88	95/75	110/60	140/70	1180	1000
15	80	120	100	135/85	140/60	105/60	880	1020

A, primary values before "lytic cocktail."
B, secondary values during "lytic cocktail."
C, values during nitrous-oxide anæsthesia.

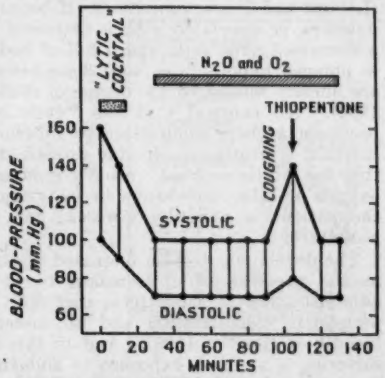


Fig. 3—Blood-pressure record showing the hypotensive effect of rapid administration of the "lytic cocktail."

Clinical Observations

In the early studies the infusion of the "lytic cocktail" was given slowly: 100 ml. in fifteen minutes and the remaining 100 ml. during the succeeding hour. Latterly, however, the whole 200 ml. has been administered within fifteen minutes. With the original technique, the patients became sleepy and difficult to rouse but anæsthetic drugs and relaxants were needed for intubation. When the "lytic cocktail" was run in rapidly, the patients became truly unconscious within fifteen mintues and did not respond to painful stimuli. Intubation could then usually be done without anæsthetic drugs or relaxants.

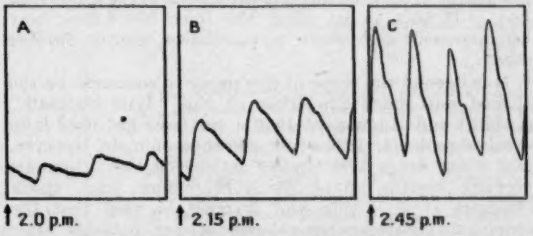


Fig. 4—Peripheral-pulse volumes (A) before and (B) during administration of the "lytic cocktail," and (C) supplemented by nitrous-oxide anæsthesia. The pulse volume increases within fifteen minutes of the start of the infusion but does not become maximal until nitrous-oxide anæsthesia is complete.

The whole dose of the "lytic cocktail" was not deemed necessary in a few cases, but extra dosage might have been advisable in some of the younger and more vigorous patients. Unconsciousness, loss of reflex action to painful stimuli, and easy intubation were indications of adequate dosage. Inadequate dosage was liable to be associated with the development of temporary hypertension when intubation was attempted.

Bleeding during operation appeared to be average except when the blood-pressure remained low. The superficial veins of the limbs were dilated; they filled when the limbs were dependent and emptied rapidly when they were elevated. Intravenous fluids could be infused rapidly with ordinary hydrostatic-drip equipment.

The patients became somewhat pale and grey after the "lytic cocktail" was given, but the skin was warm and dry and the capillary bed emptied and refilled rapidly after pressure.

Discussion

The term "artificial hibernation" has been used to describe the effects produced by the "lytic cocktail"

(Laborit and Huguenard 1951). Hibernation in animals, however, is associated with a decreased metabolic rate, a decreased pulse-rate, and a fall of body-temperature: in induced hypothermia, too, these decreases occur and are linearly related to the degree of cooling (Lynn et al. 1954). To contend that the "lytic cocktail" alone produces a state comparable to hibernation, or hypothermia, is irrational; for the present study has shown that the "lytic cocktail" usually produces no change in oxygen uptake, no change in body-temperature when the patient is normally covered, and an increase in pulse-rate.

The development of an increased digital-pulse volume in the presence of a decreased blood-pressure, after administration of the "lytic cocktail," is evidence of peripheral vasodilatation and an increased peripheral blood-flow (Burton 1939). And in this state, provided shivering is avoided, exposure to ambient temperatures lower than that of the body will result in some degree of cooling. To credit a reduction of body-temperature to a specific action of the "lytic cocktail" on the thermoregulatory centre is unnecessary: methonium compounds (Hamilton et al. 1954), and probably other vasodilator drugs, will, in similar circumstances, produce similar effects.

There is nothing, apart from slight tachycardia, to suggest that the "lytic cocktail," in the doses we have employed, has any specific action on the heart itself. The increased cardiac output which occurs is probably effected by the decreased over-all resistance.

The decreased over-all resistance, which is substantial and which is in contrast to the effects of general anæsthesia (Shackman et al. 1952), may involve not only the peripheral circulation but also the vessels of the splanchnic bed. If this is so, then the liver blood-flow may be increased and such a possibility merits further study.

It is beyond the scope of this paper to comment on the alleged anti-shock properties of the "lytic cocktail" (Laborit and Huguenard 1953): we have not used it in shocked patients. It has been shown in animals, however, that other drugs with similar actions on the autonomic nervous system afford some protection from shock (Wiggers et al. 1950), and it must be said that the immediate postoperative course of our patients after major surgery has been smooth and that postoperative sedation has seldom been required. Whether the "lytic cocktail" produces this effect by autonomic blockade (Burn 1954) or by a central cerebral action (Delay et al. 1952) is undetermined. There is little doubt that some vasomotor paresis persists for several hours after administration of the drugs, and a protracted postoperative hypotension has, on occasion, required elevation of the foot of the patient's bed and binding of the lower limbs for restitution.

Conclusions

The "lytic cocktail," in patients undergoing surgery, produces an increased peripheral blood-flow. It usually produces an increased pulse-rate, a fall of blood-pressure, a rise of cardiac output, and a decreased calculated over-all systemic resistance. It does not produce hypothermia in the unexposed patient, and it does not affect oxygen uptake. It is a good preoperative and postoperative sedative. When given rapidly it renders the patient unconscious and, by itself, produces a level of anæsthesia in which endotracheal intubation is possible. It produces dilatation of the superficial veins of the limbs and allows rapid intravenous infusion at ordinary hydrostatic-drip pressures. It is doubtful if the circulatory effects produced by the "lytic cocktail" differ substantially from those produced by other vasodilator drugs.

References at foot of next column

THE EFFECTS OF ALDOSTERONE IN ADDISON'S DISEASE AND ADRENAL PSEUDOHERMAPHRODITISM

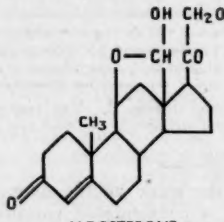
F. T. G. PRUNTY
M.A., M.D. Camb., F.R.C.P.
PHYSICIAN TO ST. THOMAS'S HOSPITAL, LONDON; PROFESSOR OF CHEMICAL PATHOLOGY IN THE UNIVERSITY OF LONDON

R. R. MCSWINEY
M.B. Lond.
SENIOR LECTURER IN CHEMICAL PATHOLOGY

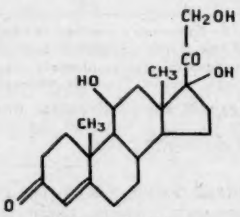
IVOR H. MILLS
Ph.D. Lond., M.B. Camb., M.R.C.P.
JUNIOR LECTURER IN MEDICINE AND CHEMICAL PATHOLOGY

MARGERY A. SMITH
B.Sc. Melb.
RESEARCH ASSISTANT, DEPARTMENT OF CHEMICAL PATHOLOGY
ST. THOMAS'S HOSPITAL MEDICAL SCHOOL

ALDOSTERONE has been detected in and isolated from adrenal-gland extracts (Simpson and Tait 1953, Mattox et al. 1953), and its structure has been determined (Simpson et al. 1954).



ALDOSTERONE



HYDROCORTISONE

Its isolation has been made possible by the fact that it has powerful sodium-retaining properties in the adrenalectomised rat (Simpson and Tait 1952). The amount circulating in human blood is less than 0·1 μg. per 100 ml. (Simpson and Tait 1954) compared with about 8 μg. of other "corticoids" per 100 ml.

Mach et al. (1954) have reported two cases of Addison's disease in which excellent control of the electrolyte disturbance was achieved with injections of about 200 μg. daily of aldosterone. Kekwick and Pawan (1954) found some sodium-retaining activity when aldosterone was given orally to a patient with Addison's disease.

We report here the effect of aldosterone on the metabolism of electrolytes and water in Addison's disease, and on the metabolism of electrolytes and steroids in a patient with congenital adrenal pseudohermaphroditism.

Methods

Both patients were admitted to the metabolism ward and put on a constant diet. Diets were sampled for analysis during each metabolic period according to our

MR. SHACKMAN AND OTHERS: REFERENCES

Aperia, A. (1940) *Skand. Arch. Physiol.* **83**, suppl. 16.
Burn, J. H. (1954) *Proc. R. Soc. Med.* **47**, 617.
Burton, A. C. (1939) *Amer. J. Physiol.* **127**, 437.
Delay, J., Deniker, P., Harl, J. M. (1952) Société Médico-psychologique, June 23.
Douglas, J. C., Edholm, O. G. (1949) *J. appl. Physiol.* **2**, 1949.
Dundee, J. W., Gray, T. C., Mesham, P. R., Scott, W. E. B. (1953) *Brit. med. J.* ii, 1237.
Fick, A. (1870) *Sitz. phys.-med. Ges. Würzburg*, p. 16.
Hamilton, M., Henley, K. S., Morrison, B. (1954) *Clin. Sci.* **13**, 225.
Laborit, H., Huguenard, P. (1951) *Pr. méd.* **59**, 1329.
— — (1953) *Ibid*, **61**, 1029.
— — Alluaume, R. (1952) *Ibid*, **60**, 206.
Lynn, R. B., Melrose, D. G., Churchill-Davidson, H. C., McMillan, I. K. R. (1954) *Ann. R. Coll. Surg. Engl.* **14**, 267.
Means, J. H., Woodwell, M. N. (1921) *Arch. intern. Med.* **27**, 608.
Melrose, D. G., Lynn, R. B., Rainbow, R. L. G., Wherrell, A. G. (1954) *Lancet*, i, 810.
Shackman, R., Graber, I. G., Melrose, D. G. (1952) *Brit. J. Surg.* **40**, 13.
Van Slyke, D. D., Neil, J. M. (1924) *J. biol. Chem.* **61**, 523.
Wiggers, H. C., Goldberg, H., Roemhild, F., Ingraham, R. C. (1950) *Circulation*, **2**, 179.

usual technique. Sodium and potassium were determined by internal standard flame photometry; chloride by the method of Van Slyke and Hiller (1947); changes in extracellular fluid volume were calculated by the method used previously (Prunty et al. 1948); changes in total body-water by recording day-to-day weight changes; 17-ketosteroids in urine by the method of the Medical Research Council (1951); "17-hydroxycorticoids" by a slightly modified version of the method of Reddy et al. (1952); and blood-sugar by the method of Hagedorn and Jensen (1923).

Case 1—Addison's Disease

A married woman, aged 52, with severe Addison's disease had had substitution therapy for nine years. The last pellet of deoxycortone acetate had been implanted thirteen months previously, and in addition she received cortisone acetate 12·5 mg. daily by mouth. It was considered urgently necessary to reimplant deoxycortone acetate at the time these observations were made. Over the years the blood-pressure had risen to 160/90 mm. Hg under adequate maintenance therapy; on the present admission it had fallen to 120/70 mm. Hg.

The patient received injections of deoxycortone acetate for twelve days before they were gradually stopped by day 6 of the present study (fig. 1).

During this time equilibrium of sodium excretion was temporarily established on the balance diet, which, owing to an error in preparation, contained only 71 m.eq. of sodium daily. This was considerably less than the extra salt which the patient had been receiving, and accounts for the negative sodium balance on days 1, 2, and 3. On withdrawal of treatment on day 6 she went into negative sodium balance. Aldosterone administered intramuscularly in oil on days 8, 9, 10, and 12 quickly produced a strongly positive sodium balance. The retention of sodium clearly exceeded that of chloride and indicated a transfer of sodium to the tissues. Withdrawal of treatment on day 11 allowed temporary escape from this retention of sodium.

Fig. 2 shows the result of more detailed study of the diurnal excretion of sodium. During the morning the patient sat up in bed, and after lunch she got up. She had breakfast at 8.30 A.M. (19 m.eq. of sodium); lunch at 12.30 P.M. (16 m.eq. of sodium); tea at 3.45 P.M. (16 m.eq. of sodium); and supper at 7 P.M. (21 m.eq. of sodium). On days 1–2, when she received cortisone and deoxycortone acetate, days 5–6, when she had cortisone alone, and days 6–7 and 10–11, when she had no treatment, the rate of excretion of sodium was highest late in the morning and in the late evening. This was most evident on full treatment with deoxycortone acetate and cortisone, but owing to the previously higher intake of sodium the excretion of sodium was still high at this time. Aldosterone was given on days 7–9 and 11–13. It usually begins to act two hours after administration, but often there is increased excretion of sodium in the first hour after injection. The effect of 100–200 µg. is greatest at four to five hours and begins to wear off at seven to eight hours. The injection of 400 µg. on day 12–13 had an effect which lasted twelve hours or more. The

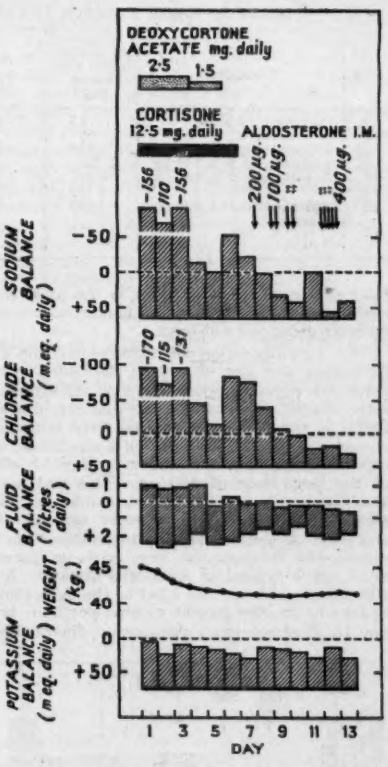


Fig. 1—Sodium, chloride, and potassium balances and water intake and output in case 1 with Addison's disease. Fæcal Na was 0·5 m.eq. daily, and fæcal K 3 m.eq. daily. Values above the line represent negative balance. Values plotted from the line marked 0 to the base represent total intake. Hatched area, urine excreted; solid area, fæces. Aldosterone was given as follows: day 8, 200 µg. I.M. at 9 A.M.; day 9, 100 µg. at 10 A.M. and 5 P.M.; day 10, the same; day 11, nil; day 12, 100 µg. at 8 A.M., 2 P.M., 8 P.M., and 2 A.M., and 400 µg. at 6 A.M.

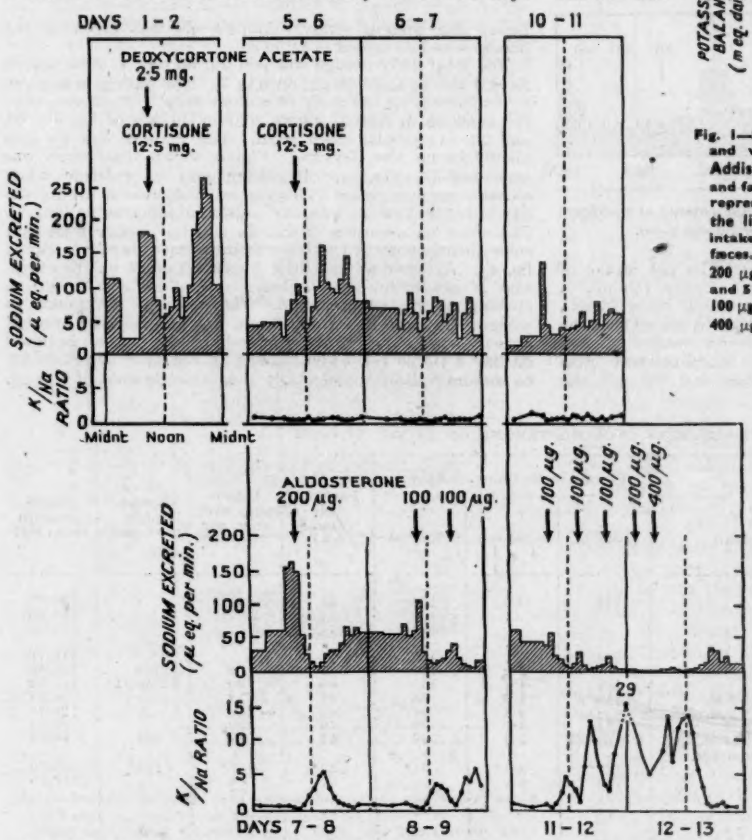


Fig. 2—Diurnal variation of excretion of sodium and K/Na ratio in urine in case 1. Since the "days" normally start at 10 A.M. (fig. 1) they overlap with the twenty-four hour periods shown in this figure and in fig. 3.

TABLE I—WATER BALANCE IN CASE 1

Day	Treatment	A, change in chloride space (ml.)	B, change in weight (g.)	B − A, cell water balance (ml.)
6	Cortisone 12·5 mg.	−745	−400	+345
7	Nil	−657	0	+657
8	Aldosterone 200 µg.	−354	−100	+254
9	Aldosterone 2 × 100 µg.	−56	−200	−144
10	Aldosterone 2 × 100 µg.	+19	+200	+181
11	Nil	+189	+200	+11
12	Aldosterone 4 × 100 µg. and 400 µg.	+187	+100	−87
13	Nil	+279	−200	−479

ratio of potassium to sodium is the most sensitive index of activity, although day-to-day changes in excretion of potassium were irregular and not large.

The administration of aldosterone checked the cellular hydration and loss of weight associated with loss of water when the previous treatment was withdrawn (table I). The retention of water, however, was not much. The changes found in the extracellular fluid were those expected. Aldosterone appears to have caused a significant transfer of intracellular to extracellular water on day 13 after the injection of the large dose of 400 µg. This was accompanied by a significant fall in hæmatocrit (table II). There was little effect on the excretion of water through the day (fig. 3), and even on control days this excretion was fairly uniformly distributed through the day, with an increase during the night, as is typical of Addison's disease. Administration of 900 ml. of water on day 2 led to the excretion of only 225 ml. in four hours, the largest volume per hour being 72 ml. On day 13, after receiving aldosterone, the patient drank 840 ml.

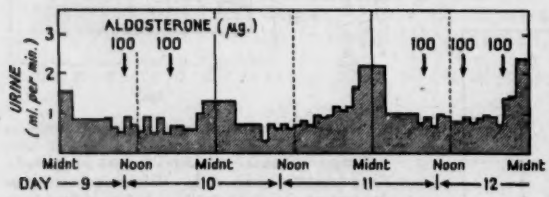


Fig. 3—Diurnal excretion of water in case 1 and absence of significant retention of water when aldosterone was given.

of water, but vomited 210 ml. of this. The net intake of 630 ml., however, led to the excretion of only 150 ml. in four hours (24%), the largest volume per hour being 44 ml., far less than the normal expected. Table II shows that the plasma-sodium and plasma-chloride levels tended to fall under treatment with aldosterone. Blood-pressure was maintained when aldosterone was given and did not rise unduly. Eosinophils were unaffected, but there appears to have been a significant rise of the blood-sugar level. The patient's fasting blood-sugar level is, with routine treatment, about 78–84 mg. per 100 ml. Aldosterone did not noticeably affect pigmentation, but the course of treatment was too short to produce any significant changes.

Case 2—Congenital Adrenal Pseudohermaphroditism

A girl, aged 13, with severe pseudohermaphroditism due to adrenal hyperplasia underwent partial adrenalectomy at the age of 3 years. After temporary reduction of the amount of 17-ketosteroids excreted in the urine the excretion of these substances rose to preoperative levels within a few months, and treatment with stilbœstrol caused no improvement in the patient's condition or in the amount of steroids excreted. She had received no endocrine therapy for several years before the present study. Aldosterone was given in the dosage schedule shown in table III.

TABLE III—ALDOSTERONE DOSAGE IN CASE 2 *

Day	Time	Aldosterone in oil I.M. (µg.)	Aldosterone in saline solution I.M. (µg.)	Aldosterone I.V. (µg.)
4	9 A.M.	100	..	..
	6 P.M.	100	..	..
	2 A.M.	300	..	..
5	10 A.M.	100	250	..
	6 P.M.	100	250	..
	2 A.M.	100	250	..
6	10 A.M.	100	250	..
	6 P.M.	100	250	..
	2 A.M.	100	250	..
7	From 10 A.M. to 10 A.M.	..	..	750†

* This curious scheme of dosage was used because of the form in which the aldosterone had been dispensed.
† Given in 1500 ml. of 5% glucose.

The total daily dosage was 500 µg. on day 4, 1050 µg. on days 5 and 6, and 750 µg. on day 7. The patient was given a diet containing 115 m.eq. of sodium daily. Mealtimes were the same as in case 1, giving sodium intakes of 35, 30, 20, and 35 m.eq. with each meal. The patient was up and about during the daytime. Fig. 4 shows that there was considerable retention of sodium and of chloride when aldosterone was given. This retention decreased during the day of continuous intravenous infusion of aldosterone (day 7). The effect on retention of sodium was far greater than that subsequently observed with cortisone acetate (day 12 onwards, fig. 4). Aldosterone had little consistent effect on the excretion of potassium until a loss occurred on day 7 with a striking subsequent rebound. The ratio of potassium to sodium was greatest on day 6 and was only slightly affected by cortisone. The excretion of sodium was studied in detail on day 4 (table IV). The changes in the ratio of potassium to sodium indicate particularly that a single dose of 100 µg.

TABLE II—EFFECTS OF ALDOSTERONE ON BLOOD IN CASE 1

Day	Treatment			Plasma levels (m.eq. per litre)			Packed-cell volume (%)	Blood-sugar level (mg. per 100 ml.)	Eosinophils (per c.mm.)	Blood-pressure (mm. Hg)
	Deoxycortone acetate (mg.)	Cortisone (mg.)	Aldosterone (µg.)	Sodium	Potassium	Chloride				
1	2·5	12·5	..	..	..	..	..	..	..	..
2	2·5	12·5	..	140	3·3	104	29	..	..	120/68
3	2·5	12·5	..	..	..	..	..	..	..	140/66
4	1·5	12·5	..	..	..	..	..	..	..	118/75
5	1·5	12·5	..	..	..	..	..	..	..	..
6	..	12·5	..	134	..	103	..	..	..	110/70
7	..	..	..	139	4·2	100	32	89	168	120/80
8	..	..	200 at 9 A.M.	139	4·2	101	40	160	4 P.M. 125	112/72
9	..	..	100 at 10 A.M. and 5 P.M.	140	4·3	98	42	112	..	100/69
10	..	..	100 at 10 A.M. and 5 P.M.	134	4·3	97	42	134	..	120/77
11	..	..	..	134	4·1	96	42	120	..	94/64
12	..	..	100 at 8 A.M., 2 P.M., 8 P.M., and 2 A.M., and 400 at 6 A.M.	6 A.M. 132	5·2	96	42	94	120	94/70
13	..	..	..	128*	4·3*	94*	39*	103*	125*	108/70
14	4·0	..	..	128	4·4	..	..	86	..	112/75
15	2·0	12·5	..	..	..	..	..	77	..	..
16	2·0 implant 300	12·5	..	..	..	..	..	..	..	..
17	..	12·5	..	135	4·3	102	..	..	..	..

* 6 hr. after the previous dose of aldosterone.

TABLE IV—EFFECT OF ALDOSTERONE ON EXCRETION OF SODIUM IN CASE 2

(Aldosterone I.M. 100 μg. at 9 A.M. and 6 P.M. and 300 μg. at 2 A.M. on day 4)

Day	Time	Sodium (μeq. per min.)		K/Na
3	10 A.M. –11 A.M.	126		0·44
	11 ,, –12 noon	112		0·76
	12 noon– 1 P.M.	139		0·52
	1 P.M. – 2 ,,	106		0·73
	2 ,, – 3 ,,	182		0·48
	3 ,, – 4 ,,	179		0·36
	4 ,, –10 P.M.	124		
	10 ,, – 4 A.M.	34		
	4 A.M. – 7 ,,	39	Av. 72	Av. 0·46
	7 ,, – 8 ,,	58		
	8 ,, – 9 ,,	145		
4	9 ,, –10 ,,	97		..
	10 ,, –11 ,,	57		0·56
	11 ,, –12 noon	40		1·80
	12 noon– 2 P.M.	38		2·70
	2 P.M. – 3 ,,	72		1·50
	3 ,, – 4 ,,	75		1·20
	4 ,, –10 A.M.	32		0·94

of aldosterone was still causing significant effects after seven hours. The rhythm of excretion of sodium on day 3, the control day, is normal in pattern. Computations of shifts of body-fluid from the chloride balance and weight curve were made difficult by the necessity to force fluids on day 3 (fig. 4) in order to obtain short-period collections of urine, and by the intravenous infusion of 1·5 litres on day 7. However, during days 4–6 on aldosterone there seemed to be a transfer of 1·5 litres of fluid from the tissues to the extracellular space. Fig. 4 does not show much retention of fluid when aldosterone was given, except perhaps on day 6.

In this patient there was a slight rise in plasma-sodium and plasma-chloride levels under treatment with intramuscular aldosterone. Thus, the plasma-sodium level rose from 144 m.eq. per litre before treatment to 153 m.eq. per litre on day 7 and fell to 145 m.eq. per litre at the end of infusion with aldosterone. Eosinophils were unaffected; for example, at the start of infusion with aldosterone they numbered 175 per c.mm, and after 6½ hours' infusion 150 per c.mm. No significant changes in blood-pressure were observed. Table v shows the blood-sugar levels (the blood-sugar curve was constructed twenty-six days before the other estimations were made). It will be noted that aldosterone apparently prevented the tendency to hypoglycæmia three hours after the ingestion of carbohydrates.

Excretion of Steroids.—The control levels of 17-ketosteroids in this patient varied between 89 and 121 mg. daily. This variation is characteristic of congenital adrenal pseudohermaphroditism, and it will be seen (fig. 5) that cortisone produced the classical depression of 17-ketosteroids. There was also a significant rise in the "17-hydroxycorticoids" (Porter-Silber) due to tetrahydrocortisone and other metabolites from the administered cortisone. It is not thought that aldosterone had any effect on the excretion of either 17-ketosteroids or "17-hydroxycorticoids."

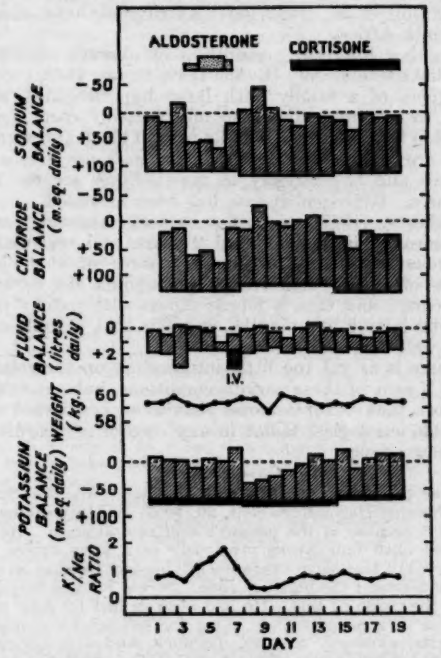


Fig. 4—Sodium, chloride, and potassium balances and water intake and output in case 2 with adrenogenital syndrome. Fæcal Na was 0·5–0·8 m.eq. daily, Cl 0·4–0·5 m.eq. daily, and K 5–6 m.eq. daily. For aldosterone dosage see table III. Cortisone acetate was given I.M. 100 mg. on days 12 and 13, and orally 75 mg. daily from day 14 to day 24 and 100 mg. from day 25 onwards.

Discussion

The observations reported here on the effect of aldosterone on the metabolism of electrolytes agree with those reported by Mach et al. (1954) in Addison's disease and by Gross and Gysel (1954) in the adrenalectomised dog. The effects are characterised by retention of sodium and chloride and minimal retention of water during the period of observation. Some sodium enters the tissues, and extracellular water increases at the expense of intracellular water. Such changes have been previously found with corticotrophin (Prunty et al. 1953), and the importance of the water shifts was emphasised. Fourman et al. (1950) found similar changes with hydrocortisone, and at that time were led to consider that there was no need to postulate a deoxycortone-like hormone, which others have thought to exist (Prunty et al. 1953). It must be pointed out that aldosterone is, at the very least, ten times as active as deoxycortone acetate and therefore far more potent than any known steroid. Unlike cortisone, even in large doses, it has not corrected the abnormality in excretion of water in our patient with Addison's disease and one of the patients observed by Mach et al. (1954); nor has it significantly affected the excretion of water through the day. According to Gaunt (1954) aldosterone is only about a third as effective as cortisone in causing depression of eosinophils and the deposition of glycogen in the liver in experiments on animals, which fact suggests that doses a hundred times as great as those used in the present investigation would be needed for "carbohydrate" effects. Indeed neither of our patients showed any significant response in eosinophil-counts, even with doses up to 1050 μg. daily. Surprisingly, however, the blood-sugar findings suggest that both patients were affected by aldosterone. It would be reasonable to disregard these results but for the fact that Mach et al. (1954) reported significant changes in the tolerance of glucose in one of their two patients, particularly in the hypoglycæmic phase, and Kekwick and Pawan (1954) also noticed a rise in the glucose-tolerance curve. The failure to observe a decrease in 17-ketosteroid levels shows a lack of cortisone-like effect in this regard as well.

The data presented here give further information on the speed and duration of the action of aldosterone. Even when administered in oil a dose of 100 μg. was

TABLE V—BLOOD-SUGAR LEVELS IN CASE 2

Blood-sugar curve after 50 g. of glucose orally		Day 6 (aldosterone)		Day 11 (control)
Time (hr.)	Blood-sugar (mg. per 100 ml.)	Time	Blood-sugar (mg. per 100 ml.)	Blood-sugar (mg. per 100 ml.)
0	87	8.30 A.M.	Breakfast	Breakfast
½	170	..	..	..
1	133	9.30 A.M.	95	115
2	136	10.30 A.M.	115	99
2½	89	11.30 A.M.	100	61
3	63	12.30 P.M.	99	94

active in two hours, and the effect was wearing off after eight hours; after a dose of 400 μg. the effect lasted longer. A point of special interest relates to the intravenous infusion of free aldosterone. By analogy with previous work with cortisone and hydrocortisone (Thorn et al. 1953) it was anticipated that this would be the most effective method, and the decreased retention of sodium on this day was a surprise. Free aldosterone

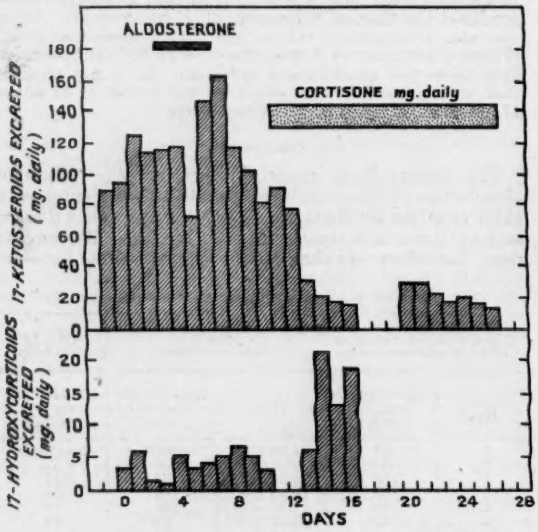


Fig. 5—Excretion of urinary steroids in case 2. For doses of aldosterone see table III. For cortisone dosage see fig. 4.

could easily be detected in the urine during this day (I. H. Mills, unpublished data).

Summary

Aldosterone in doses down to 100 μg. produced significant retention of sodium and chloride and shifts of body-fluid.

It seemed to afford splendid substitutive therapy in *Addison's disease as regards the metabolism of electrolytes.*

There was no appreciable effect on eosinophils in the dosage used, but changes were observed in blood-sugar levels.

In an adrenal pseudohermaphrodite the excretion of 17-ketosteroids was not reduced by aldosterone, although *cortisone produced significant results.*

We wish to thank Dr. F. Gross and Dr. F. Wrigley, of the Ciba Co. Ltd., for supplies of aldosterone.

REFERENCES

Fourman, P., Bartter, F. C., Albright, F., Dempsey, E., Carroll, E., Alexander, J. (1950) *J. clin. Invest.* **29**, 1462.
Gaunt, R. (1954) Ciba Foundation Colloquia on Endocrinology (in the press).
Gross, F., Gysel, H. (1954) *Acta endocrinol.* **15**, 199.
Hagedorn, H. C., Jensen, B. N. (1923) *Biochem. Z.* **135**, 46.
Kekwick, A., Pawan, G. L. S. (1954) *Lancet*, ii, 162.
Mach, R. S., Fabre, J., Duckert, A., Borth, R., Ducommun, P. (1954) *Schweiz. med. Wschr.* **84**, 407.
Mattox, V. R., Mason, H. L., Albert, A. (1953) *Proc. Mayo Clin.* **28**, 569.
Medical Research Council (1951) *Lancet*, ii, 585.
Prunty, F. T. G., Forsham, P. H., Thorn, G. W. (1948) *Clin. Sci.* **7**, 109.
— Kay, H. E. M., Lee, G. de J., McSwiney, R. R. (1953) *Brit. med. J.* i, 852.
Reddy, W. J., Jenkins, D., Thorn, G. W. (1952) *Metabolism*, **1**, 511.
Simpson, S. A., Tait, J. F. (1952) *Endocrinology*, **50**, 150.
— — (1953) The Determination of Adrenocortical Steroids and their Metabolites. London; p. 9.
— — (1954) Ciba Foundation Colloquia on Endocrinology (in the press).
— — Wettstein, A., Neher, R., von Euw, J., Schindler, O., Reichstein, T. (1954) *Experientia*, **10**, 1132.
Thorn, G. W., Jenkins, D., Laidlaw, J. C., (1953) *Recent Progr. Hormone Res.* **8**, 171.
Van Slyke, D. D., Hiller, A. (1947) *J. biol. Chem.* **167**, 107.

MYOCARDIAL TOXOPLASMOSIS

J. W. PAULLEY, M.D. Lond., M.R.C.P.
RONALD JONES, M.A., M.D. Camb., F.R.C.P.
PHYSICIANS TO THE IPSWICH HOSPITALS
W. P. D. GREEN, M.B. Lond., SENIOR REGISTRAR
E. P. KANE, M.B., D.C.H., SENIOR HOUSE PHYSICIAN
EAST SUFFOLK AND IPSWICH HOSPITAL

In the last fifteen years several cases of toxoplasmosis have been published in which the parasites were found in the myocardium after death. Electrocardiographic evidence of myocarditis in toxoplasmosis was reported by Pinkerton and Henderson (1941), Bengtsson (1950), and Strom (1951) describing the same case, and Kass et al. (1952). Bengtsson appears to have been the first to report myocarditis as a presenting feature of toxoplasmosis but it was associated with the other usual manifestations of the acute acquired disease. Once again the patient was a laboratory worker, this time probably infected per os.

Myocarditis with no obvious cause is not very uncommon, and necropsy cannot always be relied upon to find the cause. In young people rheumatism is usually suspected, though the history may be atypical and valvular lesions do not develop. The myocarditis described by Fiedler (1889) is then often the final diagnosis. In this condition myocardial focal necrosis is followed by fibrosis; the valves are unaffected, but mural thrombi are common in the ventricles. It has been thought for some time that Fiedler's myocarditis may not be a clinical entity but due to different disease processes, toxic and infective.

Attention has been drawn by Bedford and Konstam (1946) and Ball et al. (1954) to endomyocardial fibrosis in Africans, which certainly has some points in common with Fiedler's myocarditis, and by Gillanders (1951) and Higginson et al. (1952) to "nutritional heart-disease" in South Africa.

Another interesting condition of obscure ætiology is familial cardiomegaly (Evans 1949, Davies 1952): several members of a family with large hypertrophied hearts tend to die suddenly at an unexpectedly early age, or develop heart-failure. Bundle-branch block and arrhythmias are common during life, and at necropsy myocardial fibrosis and hypertrophy of muscle-fibres are the main features. Glycogen disease has been excluded.

Vulliamy (1947) reported a case of idiopathic cardiac hypertrophy in a child aged 2 years, and reviewed the previous reports. The clinical course of this child's illness of measles followed by pneumonia and recurrent bronchitis, and then a febrile illness with patchy pneumonitis lasting five months, suggests that toxoplasmosis may well have been the cause.

There is as yet too little information on the relationship, if any, of these various conditions, but our findings suggest that toxoplasmosis should be considered as a possible ætiological factor in any case of myocarditis of unknown cause.

Case-reports

Case 1.—A man, aged 24, was admitted to the East Suffolk and Ipswich Hospital on Sept. 20, 1953. History-taking was difficult because of the patient's dull mental state. He had worked until four weeks previously as a lorry driver in a factory, but had never taken his driving-test because he could not understand the highway code. Severe myopia may have been the cause of this. He had been in bed for four weeks because of a pleuritic pain along the left subcostal margin, anorexia, sweating, malaise, dyspnœa, and a cough severe enough to make him vomit. A week before admission he had had a fit, with foaming at the mouth and twisting of the face. The right side of his body went stiff, and on admission he still had a tendency to fall to the left, but this soon cleared.

On examination he looked sick and was febrile. The signs of a large left pleural effusion were found. A white-cell count

showed 8000 per c.mm. (polymorphs 79·5%). Pleural fluid contained 97% lymphocytes; it was negative on culture and on guineapig inoculation for tubercle bacilli.

Treatment and Course.—The patient was treated with penicillin 1 g. and later 2 g. daily. His temperature, never high, appeared to settle. He was subsequently given streptomycin as well. The erythrocyte-sedimentation rate never exceeded 15 mm. in 1st hour (Westergren). Fluid removed from the left chest was replaced by air and did not re-form. His condition improved sufficiently for him to be sent for convalescence on Oct. 19, 1953. On Jan. 18, 1954, he was seen as an outpatient, when his heart was found to be big. He had lost weight but had no complaints. The pulmonary second sound was split; there were no murmurs. The apex-beat was diffuse in the 6th space in the anterior axillary line. The blood-pressure was 130/70 mm. Hg. Radiography showed a large pulmonary conus and very large right ventricle and left ventricle. Electrocardiography showed auricular fibrillation and gross left bundle-branch block.

Readmission.—On Feb. 19, 1954, he was readmitted as an emergency with a sudden left hemiplegia, preceded by twenty-four hours' headache and three days' insomnia. Bilateral papillitis and fine scattered pigmentation over a wide area of the fundus, though most heavily concentrated near the macula, were found which had neither been present in February, 1953, when his eyes were passed as normal by an ophthalmologist, nor when he was first admitted. He had a left hemiplegia and was confused and incontinent. His cerebrospinal fluid (C.S.F.) was not under pressure and contained 94 red cells and 22 mononuclears per c.mm., protein 35 mg. per 100 ml., and slightly increased globulin. The Wassermann reaction and Kahn test were negative. His pleural effusion had re-formed, and his heart was as before.

Treatment and Progress.—He was treated with penicillin 2 g. daily and then with streptomycin 2 g. daily as well. There was not much improvement till March 13, 1954, when his dizziness and dyspnœa were less and he was now continent and mentally oriented. On March 31, 1954, his C.S.F. was normal in cytology and protein. His condition was improving. Numerous blood-cultures and other laboratory investigations had been negative. On April 14, 1954, antibiotics were discontinued after two months' penicillin and seven weeks' streptomycin. On April 28, 1954, he was reviewed at a clinical meeting. The following diagnoses were considered: periarteritis nodosa, lupus erythematosus, Fiedler's myocarditis, rheumatic carditis, diphtheria, atrial septal defect, and toxoplasmosis.

Dr. I. A. B. Cathie tested the patient's serum for toxoplasmosis and found that the dye-test was positive at 1/64, and the complement-fixation test at 1/16. The patient's skull was radiographed, but no cerebral calcification was found. Efforts were then made to obtain further details of his family history.

Family History.—The patient's *mother* died suddenly at the age of 39. She had had signs of congestive heart-failure for at least six months. At necropsy both the right and the left sides of the heart were very large, and myocardial fibrosis was present, but the coronary vessels were normal. Her spleen was three times the normal size. Histological appearances were not recorded. The *father*, upset by mother's death and the responsibilities of his family, went into a mental hospital in 1945 and is still there. His heart is clinically normal, and the complement-fixation test was anticomplementary, but the dye-test was positive at 1/4. A *brother* of the patient died suddenly at the age of 16 in 1947 in a children's home. He is said to have had "meningitis" at the age of 3 years and to have had epileptic fits afterwards. A coroner's inquest and necropsy attributed death to heart-failure from paroxysmal tachycardia, from which he is said to have suffered. His heart was generally enlarged at necropsy, and he had a large "fibrotic spleen." A *second brother*, aged 20, spends half his time in an institution and the other half "on the road," where he is at present and untraceable. He was in the Army, but not for long. He is an enuretic and, according to the patient, "doesn't like work." The welfare officer says he has always been unpredictable and at times violent. His I.Q. is very low. A *sister* (twin of the second brother) died suddenly on June 15, 1954, in Whittington Hospital a few days after birth of a baby. She was admitted there on May 19, 1954, six months pregnant, and cardiac arrhythmia had been noted in the antenatal clinic. Œdema and albuminuria then developed, and she was thought to have pregnancy toxæmia. The diagnosis was soon changed to congestive heart-failure. There were no heart murmurs but many ectopic beats. Electrocardiography showed gross myocardial changes culminating in bundle-branch block. She deteriorated despite treatment, and died with an embolism of the bifurcation of the aorta. At necropsy "myocarditis of unusual type" was found, the embolus arising from intracardiac thrombosis of the left auricle and ventricle. Dr. J. D. O'D. Lavertine reports on the myocardium: "Severe cloudy swelling of hypertrophied fibres, slight fatty change, areas of dense young fibrous tissue, and diffuse fibrosis with focal non-specific chronic inflammation in myocardium of both ventricles, and with endocardial thrombosis. . . . The condition appears to be a non-specific myocarditis in the healing phase following severe focal necrosis." A *third brother*, aged 18, is in the Army and doing well. He went to an approved school, and was not available for examination. A *second sister*, aged 15, has been in a children's home for ten years. Her I.Q. is 75 and electrocardiogram very abnormal, with wide Q R S 0·12 sec. Radiographs of her chest and skull were normal. Her serum gave a positive result with the complement-fixation test at 1/16, and dye-test at 1/32. A *fourth brother*, aged 13, has been in a children's home ten years. His I.Q. is 71, and electrocardiogram normal apart from prominent Q_3. Radiography of his chest and skull is normal. His serum was negative for toxoplasmosis.

Case 2.—A man, aged 39, was admitted on May 14, 1954, having been off work for six months because of dyspnœa on slight exertion and ankle œdema. Breathlessness had been gradually increasing for eight years. Pain was also present across his chest on hurrying. At the age of 17 he had had a "serious illness," described as jaundice and "gastric flu." Recovery was slow and vomiting a feature. His nerves became bad and have not been good since then. Hyperthyroidism was suspected because of buphthalmos.

On examination he had an irregular pulse, his neck veins were engorged, his heart was grossly enlarged to left and right, and a soft systolic bruit was present at the apex. There were no diastolic murmurs. The blood-pressure was 120/80 mm. Hg. Thyrotoxicosis was excluded by the basal metabolic rate and I^{131} estimations. The cholesterol level was 157 mg. per 100 ml. No clinical evidence of myxœdema. Electrocardiography showed very low voltage Q R S, which was less than 0·1 sec. but slurred. His serum was positive for toxoplasmosis by the dye-test at 1/32, and by the complement-fixation test at 1/16.

Family History.—His *father* was alive and well. His *mother* died of cancer. A *sister*, aged 37, was positive to the dye-test at 1/16, and to the complement-fixation test at 1/16. *Another sister*, aged 29, was negative to the dye-test and the complement-fixation test. Radiography of her skull and chest was normal, and electrocardiography showed slight slurring of S-T. She was symptomless. A *brother*, aged 23, was positive to the dye-test at 1/32, and to the complement-fixation test at 1/32. His heart was enlarged clinically and radiologically, his pulse was irregular, and electrocardiography showed auricular fibrillation. He was symptomless apart from much sweating on exertion. He had "german measles" twice, at the age of 11 and 19 years. Pets were always kept in this household, at one time as many as nine cats.

Case 3.—A man, aged 24, was seen as an outpatient in June, 1954. He had no symptoms and played strenuous games, but having been rejected by a Service medical board at the age of 19 because of cardiomegaly, a life assurance company had referred him for an opinion on his heart. His mother had died in 1935 of an unknown cause; his elder brother was alive and well. He himself had had no serious illness.

On examination his heart was enlarged to the left; and this was confirmed radiologically, the left ventricle being chiefly involved. No heart murmurs were heard. His pulse was regular; blood-pressure 154/80 mm. Hg. Electrocardiographic findings were regarded as within normal limits; Q.–T.(c) was also normal. Because of our experience with the first two cases, serological tests for toxoplasmosis have been done, with the following results: dye-test positive at 1/512; complement-fixation test positive at 1/32.

Comment

Macdonald (1950) found the complement-fixation test positive in 5·2% of the adult population in North-West England, and the incidence was 7% in the series of Cathie and Dudgeon (1953). With this test titres of 1/4 or

higher are usually accepted as evidence of toxoplasma infection. It cannot, however, be claimed that the positive serological tests are absolute proof that the heart condition in the cases we have reported was due to toxoplasmosis. Nevertheless we suggest that the circumstantial evidence is very strong. Case 1's attacks may have been embolic from an intraventricular thrombus, but the C.S.F. and mental state suggested encephalitis. In addition there were definite fundal changes. The unexplained heart-failure and sudden death in a young mother and brother and sister, together with splenomegaly in two of them, makes an unusual story, and the necropsy report from Dr. Lavertine at the Whittington Hospital would fit the histological picture described in previous cases where toxoplasmas have been found in the myocardium.

Sabin et al. (1952) maintain that in the congenital form of toxoplasmosis no more than one sibling is ever involved. In a previous communication (Hart et al. 1951) one of us (J. W. P.) reported two successive siblings affected. Campbell (1953) reported a family in which the mother and two children appeared to have had a chronic form of toxoplasmosis for several years, in which maculopapular rashes, joint pains, conjunctival injection, and headaches were a feature. All three were shown to have meningo-encephalitis, nerve-deafness, swollen discs, or optic atrophy. The infection persisted for several years without killing the patients. The mother died recently and was found to have an abscess in the spleen. Campbell and other workers suggest that pregnancy may cause a latent chronic toxoplasmosis to flare up. It certainly seems likely that this happened with case 1's sister, and the whole family history appears to support the idea of infection present for perhaps twenty years. Hitherto it has been thought that the congenital form of toxoplasmosis results from infection of the mother during pregnancy. This view may have to be revised, and a more serious view taken of a disease which, though widespread, has been thought in the main to be benign. Earlier diagnosis and a wider appreciation of the protean manifestations, ranging from repeated abortion to mental backwardness and headaches, seem to be required and, above all, effective treatment.

Pinkerton and Henderson (1941) emphasise the fact that toxoplasmas were only found in the myocardium after a most prolonged search, and in a case described by Gilmore et al. (1942) and at first thought to be sarcosporidiosis only three pseudocysts were found in 220 sections of heart-muscle. The organism has often been found more easily, but it is as well to recognise that diagnosis remains difficult and, with culture methods still unreliable, will at present have to depend in the main on serological tests; if these are positive in obscure myocarditis with any consistency, it should amount to proof that toxoplasmosis is the cause. The possibility that we are dealing with a strain of toxoplasma with a special affinity for the myocardium may have to be considered.

The fact that very low standards of hygiene and of nutrition were present in the early childhood of case 1's family may give food for thought. It is tempting to think that the state of nutrition may influence the host's chances of overcoming toxoplasmosis as other illnesses, notably tuberculosis and malaria, and that low standards of hygiene will probably encourage cross-infection among human beings.

Summary

Focal myocarditis due to toxoplasmosis has been reported several times as part of the generalised acquired disease. It has not received recognition as a single presenting manifestation.

We suggest that toxoplasmosis should be excluded in all obscure forms of myocarditis, endomyocardial fibrosis, familial cardiomegaly, and idiopathic cardiac hypertrophy.

Three cases of myocarditis are described which are believed to be due to toxoplasmosis. Positive serological tests, abnormal electrocardiograms, and frank heart-disease were present in other members of two of these patients' families, which would normally have been regarded as instances of familial cardiomegaly.

The cases are believed to be examples of chronic toxoplasmosis, probably acquired rather than congenital.

We are much indebted to Dr. I. A. B. Cathie for the serological investigations, Dr. A. L. Jacobs and Dr. J. D. O'D. Lavertine for details of case 1's sister, and Mr. Dawson, the coroner for Ipswich, for reports of two of the persons who died some time ago.

REFERENCES

Ball, J. D., Williams, A. W., Davies, J. N. P. (1954) *Lancet*, **i**, 1049.
Bedford, D. E., Konstam, G. L. S. (1946) *Brit. Heart J.* **8**, 236.
Bengtsson, E. (1950) *Cardiologia*, **17**, 289.
Campbell, A. M. G. (1953) *Proc. R. Soc. Med.* **46**, 891.
Cathie, I. A. B., Dudgeon, J. A. (1953) *Great Ormond St. J.* **5**, 13.
Davies, L. G. (1952) *Brit. Heart J.* **14**, 206.
Evans, W. (1949) *Ibid*, **11**, 68.
Fiedler, A. (1889) Ueber akute interstitielle Myokarditis. Festschrift zur Feier des 50 jahr. Bestehens des Stadtkrankenhauses zu Dresden—Friedrickstadt Dresden, part 2, 3.
Gillanders, A. D. (1951) *Brit. Heart J.* **13**, 177.
Gilmore, H. R. jun., Kean, B. H., Posey, F. M. (1942) *Amer. J. trop. Med.* **22**, 121.
Hart, E. W., Paulley, J. W., Rivers, J. S., Westlake, E. K. (1951) *Arch. Middx. Hosp.* **1**, 26.
Higginson, J., Gillanders, A. D., Murray, J. F. (1952) *Brit. Heart J.* **14**, 213.
Kass, E. H., Andrus, S. B., Adams, R. D., Turner, F. C., Feldman, H. A. (1952) *Arch. intern. Med.* **89**, 759.
Macdonald, A. (1950) *Lancet*, **ii**, 560.
Pinkerton, H., Henderson, R. G. (1941) *J. Amer. med. Ass.* **116**, 807.
Sabin, A. B., Eichenwald, H., Feldman, H. A., Jacobs, L. (1952) *Ibid*, **150**, 1063.
Strom, J. (1951) *Acta med. scand.* **139**, 244.
Vulliamy, D. G. (1947) *Brit. Heart J.* **9**, 161.

EPILEPSY WITH FETISHISM RELIEVED BY TEMPORAL LOBECTOMY

WILLIAM MITCHELL *
M.D. Toronto, D.Psych.
RESEARCH ASSISTANT

MURRAY A. FALCONER
M.Ch. N.Z., F.R.C.S., F.R.A.C.S.
DIRECTOR, GUY'S-MAUDSLEY NEUROSURGICAL UNIT

DENIS HILL
M.B. Lond., F.R.C.P., D.P.M.
SENIOR LECTURER, DEPARTMENT OF CLINICAL NEUROPHYSIOLOGY, INSTITUTE OF PSYCHIATRY

MAUDSLEY HOSPITAL, LONDON

THE term "affect epilepsy" was first used by Bratz (1906) to indicate certain brief emotional outbursts which he considered to be epileptic. Two decades later "affective epilepsy" was applied to those reflex epilepsies in which the exciting agent is of emotional significance (Wilson 1928). The case described below should properly be placed within Kinnier Wilson's grouping because the epileptogenic stimulus was a sexually charged object or fetish, which in this instance was a safety-pin. It is of interest not only because of the unusual association of this fetish with temporal-lobe epilepsy but also because an anterior temporal lobectomy relieved both the epilepsy and the fetishism.

Case-report

For as long as he could remember, a man, aged 38, enjoyed what he described as a "thought satisfaction" when looking at a safety-pin. This was highly pleasurable and he sought the seclusion of the lavatory to indulge it, since he felt, even as a child, that this was an odd and potentially embarrassing habit. At some time between the ages of 8 and 11 years the "thought satisfaction" began to be followed by a blank period; but, since the phenomenon was kept secret, the first witness to it was his wife, who accidentally observed him, aged 23, holding a safety-pin and oblivious of his environment.

* In receipt of a grant from the Medical Research Council.

During the next few years she observed more of these attacks, and the pattern became clearer. The patient would stare at the pin for a minute and then appear glassy-eyed. Next he would make a humming noise for a few seconds and for a few further seconds sucking movements with his lips. Finally he stood immobile and unresponsive for two minutes. Recovery was then immediate. Just before some of his attacks his right pupil would dilate. By the age of 31 the immobility was followed by marking time and later by marching backwards while his right hand plucked at his left sleeve. Brief postictal confusion became evident, during which he usually proceeded with the task at hand but occasionally dressed himself in his wife's clothing.

Every fit was produced by a safety-pin and was therefore largely voluntary. A " bright shiny " whole pin was essential, and often several of them were more effective than one. Before his marriage the point of the pin need not have been protected by a hood, and from the age of 14 until 17 scissors were added as a less desirable stimulus. Aside from these minor variations the trigger was specific. Fantasies and dreams of (or accidental exposure to) a safety-pin were adequate as well.

He never injured himself during an attack although he occasionally tripped and fell when marching backwards. His employment entailed maintenance work at considerable heights, but he never fell. He was never incontinent or significantly cyanosed. Initially the seizures were a month apart but by the time of our observation they occurred in groups of two or three every 7–10 days. In the intervening period the sight of a safety-pin was innocuous. Sexual stimulation and anxiety-producing situations were the most common states in which the desire to look at a pin arose. Most frequently the fits occurred soon after awakening when, with a full bladder, adult sexual outlets were sought but refused by a frigid wife. At other times erections were not concomitant, but occasionally during either sexual intercourse or masturbation he had a fit if he fantasied his fetish.

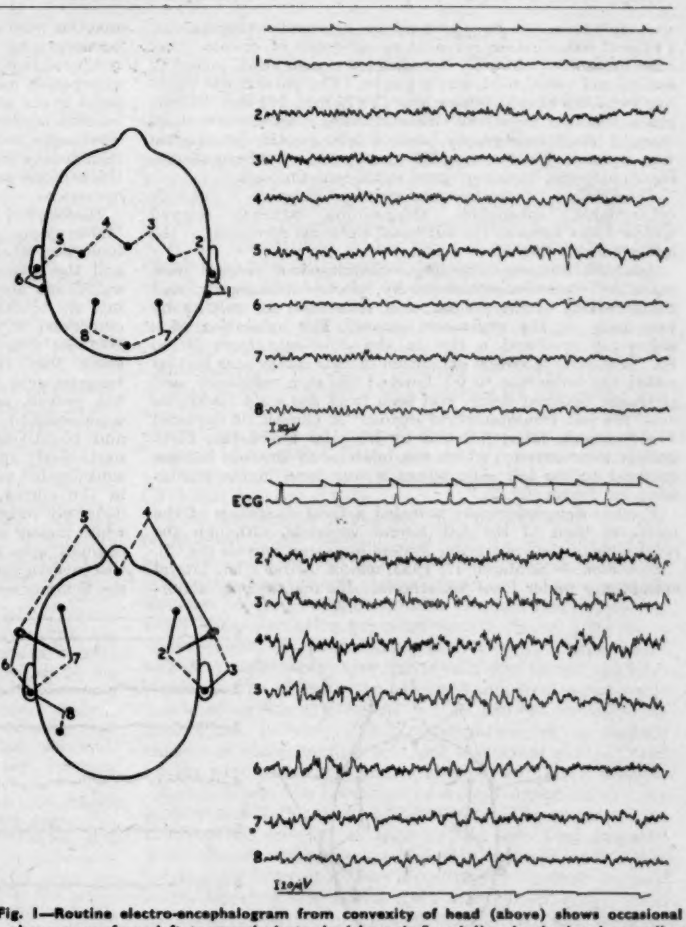


Fig. 1—Routine electro-encephalogram from convexity of head (above) shows occasional sharp waves from left temporal electrode (channels 5 and 6). In the basal recording (below) similar but more frequent firing is seen at the left sphenoidal electrode (channels 5 and 6), the discharge spreading to the electrodes over the convexity—e.g., channels 7 and 8.

During the last year the patient had been psychotic for 2 or 3 days on three occasions. The first two episodes definitely followed fits, but the last one probably developed without a seizure on the night before his operation was first scheduled. On each occasion he was grandiose, paranoid, and loudly religiose. In one attack he claimed that he was related to the King and had discovered a cure for cancer. In the last episode he stated that he received messages from God, that he had a special mission, and that the operation was inadvisable. As evidence of the validity of his claims he showed us two pictures. One was an erotic illustration of the Decameron, and the other was a magazine cover of a small boy surrounded by more than 70 objects spilled from his mother's purse. Among these objects were two very small safety-pins, one open and one closed.

Personal History.—The patient is the only son of an over-affectionate mother and a distant and older irresponsible father. The mother fostered an extraordinarily close relationship with her son and brought him up to be the antithesis of his father. He became a model effeminate child and youth and has maintained the deep attachment to his mother throughout his life. His birth and physical development were normal. There was no history of a head injury, nor was there an epileptic or psychotic family history. After an average schooling he was apprenticed to a carpenter and joiner and has conscientiously worked at this trade ever since. He married at the age of 21 and has one healthy child aged 7 years. He had psoriasis for some years. He has vivid memories of collecting and playing with " bright shiny safety-pins " as a very young child. These were always in his pocket in great numbers, and his favourite game was to join them in a chain and pull it along the floor. He connected them with napkins and with his mother, and clearly remembers seeing one in her discarded underclothes. The " thought satisfaction " was considered the greatest experience of his life—" better than sexual intercourse." Other aspects of his sexual history are auto-eroticism, adolescent homosexual mutual masturbation, and voyeuristic tendencies, with emphasis on women's breasts. During the earlier years of the marriage sexual intercourse had been performed satisfactorily about twice monthly. In the last five years he had become increasingly impotent, claiming that the safety-pin had replaced his need for a genital outlet. He had always been overtly passive, narrow, conscientious, preoccupied with money, and childlike in speech and deportment. His goal was to be a model husband and father.

Previous Treatment.—Before coming to this hospital he had been given supportive psychotherapy, one hour monthly (1942–46). Extensive notes taken at the first interviews, for which we are indebted to Dr. J. C. Smyth, conclusively rule out suggestion as an important factor in elaborating the history. He undertook this treatment when he was conscripted, his object being to gain exemption. All the usual anticonvulsants had been used without benefit. A left temporal focus was found on routine electro-encephalography, and he was referred to one of us (D. H.) by Dr. R. W. Tibbetts, who realised the rôle of the epilepsy. He was admitted to Maudsley Hospital on Jan. 2, 1953.

On examination he was intelligent, effeminate, passive, and narcissistic. Preoccupation with his problems of sexuality and epilepsy hindered any substantial rapport, but contact

was not impaired by paranoid or aggressive mechanisms. Physical examination revealed no evidence of disease other than extensive psoriasis. Neurological examination, including speech and visual field, was negative. The patient was right-handed. His blood-pressure was 130/75 mm. Hg and Wassermann reaction negative. Blood-counts, cerebrospinal fluid, straight skull radiographs, and a left carotid arteriogram were normal. Electro-encephalography and a lumbar pneumo-encephalogram, however, gave significant findings.

Interictal Electro-encephalography.—Routine records (pharyngeal, sphenoidal, thiopentone sodium) showed a clear spike focus at the left basal electrode spreading to the left convexity (fig. 1).

Ictal Electro-encephalography.—Simultaneous records were made by electro-encephalography, electrocardiography, and measurement of the palmar skin resistance as well as by two leads on the zygomatic arches. The exhibition of a safety-pin produced a rise in the pulse-rate from 70 to 80. A minute later the exhibition of four safety-pins further raised the pulse-rate to 90, lowered the skin resistance, and produced frequent firing, best seen from the scalp electrodes over the left frontotemporal region. A clinical fit occurred 30–40 seconds later, followed by irregular fluctuating high-voltage slow activity, which was bilateral at first but became confined to the left side, where it was focal in the fronto-temporal region (fig. 2).

Pneumo-encephalography revealed a focal dilatation of the temporal horn of the left lateral ventricle, although the remainder of the ventricular system appeared normal (fig. 3).

Operation.—On March 17, 1953, one of us did a left lateral craniotomy under local anæsthesia. No macroscopic abnormalities were seen in the exposed temporal lobe, but electro-corticography revealed epileptic discharges in the anterior temporal region. The temporal lobe was then resected, the extirpation including the anterior 2 cm. of the superior temporal gyrus and thence passing obliquely to a point on the inferior border of the lobe 7 cm. behind the temporal pole. The uncus and the anterior part of the hippocampus were included in the specimen (see Falconer 1953). Intravenous thiopentone sodium was used during the later stages of the operation.

Histological Findings.—Prof. A. Meyer reported as follows: "Macroscopic inspection of the specimen did not reveal any important changes. The length of the specimen was 7 cm. and the greatest width 6 cm. No gross atrophy or other significant abnormality was seen after transverse dissection into six blocks, of which three (nos. 1, 3, and 5) have been embedded in celloidin and investigated in serial sections. Sections were stained by cresylviolet, Heidenhain's myelin stain, van Giesen-hæmatoxylin, and Mallory's phospho-tungstic acid hæmatoxylin. (The Holzer method was used but proved, as this is often the case in biopsy specimens, unsuccessful.) In block 1 (region near the pole) the meninges and blood-vessel walls were slightly thickened, the latter particularly in the white matter. There was moderate to considerable marginal gliosis. No focal loss of cells was seen in the cortex, but the number of macroglial nuclei was definitely increased in the upper layers of the cortex. The white matter also showed increased glial cellularity. Similar changes were seen in blocks 3 and 5. The Ammon's horn was investigated in block 5. It showed no typical sclerosis of the Sommer sector, but there was a slight reduction of nerve-

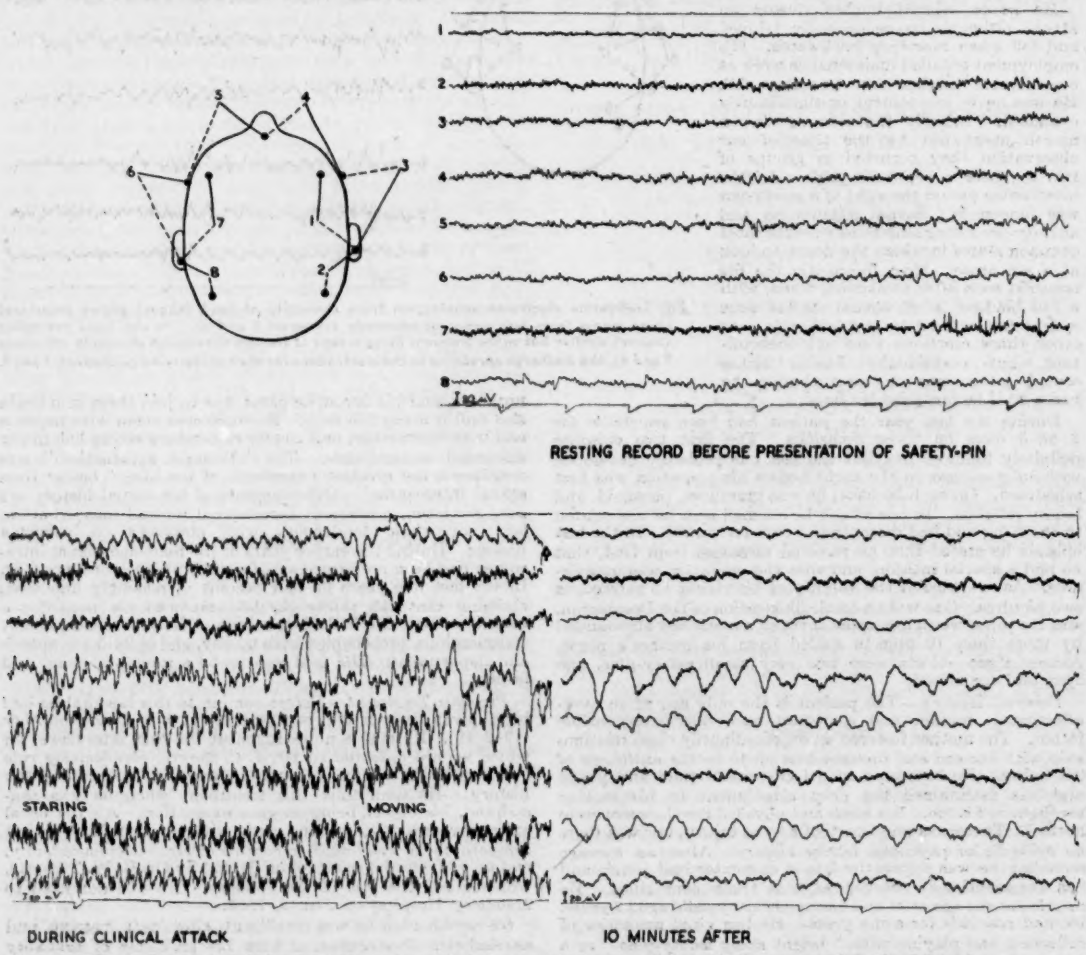


Fig. 2—Electro-encephalogram taken before and during a clinical seizure induced by the presentation of a safety-pin.

cells in the end-plate (h5), and the macroglial nuclei were in excess. Measurements of the width of the cortex were taken in the hippocampal, fusiform, and inferior temporal gyri and compared with normal temporal gyri. The figures obtained were slightly, but probably significantly, below the minimal width in the normal controls. There is thus slight atrophy of cortex and white matter, with compensatory gliosis in all convolutions available for examination. The changes in the Ammon's horn were slight. No sclerosis of the Sommer sector was found."

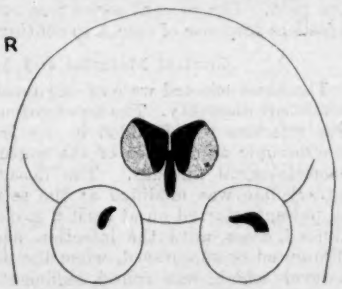


Fig. 3—Tracing of anteroposterior pneumoencephalogram shows dilated left temporal horn projected within outline of left orbit.

Follow-up.—The patient was readmitted to hospital for further study 16 months after his operation. In the meantime he had no further fits, had no desire to look at a safety-pin, and had become as potent as in early marriage. He had taken small doses of phenobarbitone irregularly. In contrast to his preoperative state he seemed much more mature and spoke of his past disabilities objectively. During the year he had worked harder than ever before. The only other evidence of personality change was that he passed mucus per rectum when involved in irritating situations with his wife or work-mates. He had gained almost a stone in weight, slept well, and had a good appetite. His relationship to his wife had improved. Mr. V. Meyer reported that the patient's intellectual abilities, measured by the Wechsler tests, remained unchanged from before operation, but there was some decrease in his ability to learn and retain new verbal material. However, the patient did not complain of any learning difficulties.

Postoperative Electro-encephalography.—Routine and sphenoidal records were made fourteen months after operation. The general characters were normal, and the exhibition of a safety-pin did not change the record, although the pulse-rate rose from 54 to 72 in anticipation, falling to 60 after the exposure was begun. No firing took place after the intravenous injection of thiopentone sodium 0·5 g., but on the waking record an occasional low-voltage spike and some fast activity were observed in the left mid-temporal areas posterior to the operation site.

Discussion

It is well known that epilepsy of temporal-lobe origin is commonly associated with personality disorder and with psychosis (Gibbs et al. 1948, Hill 1953). In such cases distressing emotional tension or behaviour disorder may precede and lead up to a seizure which can temporarily relieve the abnormal psychological state. Occasionally the morbid preictal mental state includes preoccupations with specific emotions and memories, but hitherto no case has been published in which a desire for a fetish object and gratification of the desire have led to an epileptic seizure. In this respect the case described is, we believe, unique. There can be no doubt, however, that intense emotion can precipitate seizures, but this is usually sympathetic (Wilson 1928) rather than fearful, anxious, or erotic. Moreover precipitating emotions are usually unpleasant—not, as in this case, pleasant and sought after. Occasionally a specific but meaningful stimulus, such as music (Critchley 1937), acts as the only and invariable trigger for epilepsy, and the rôle of emotion in these cases is undoubted (Shaw and Hill 1947). In yet other cases of epilepsy starting in childhood an occasion of severe emotional trauma precedes, sometimes by months, the onset of the disorder (Gowers 1881). More recently a study of temporal-lobe epilepsy has shown that the memory of distressing circumstances which preceded the onset of the epilepsy may be built, as it were, within the pattern of the seizure and are then re-experienced as an ideational-perceptual aura—a hallucinated dream-like state which can be subsequently recalled (Hill 1953).

None of these phenomena can be precisely identified in the present case. Rather it seems that a perverse form of erotic gratification had developed in early childhood in this patient long before the first epileptic seizure. The fetish is unusual, but the relationship between this type of perversion and character disorder is well known, and the patient's passive effeminate personality is in keeping with the immaturity of his psychological development. Psycho-analytical studies of fetishism suggest that the object is chosen because of its sexual symbolic significance, from an otherwise innocuous memory of the fifth or sixth year of life (Freud 1928). These memories fall into the category of the very persistent "screen" or "concealing" memories commonly experienced by normal people and useful as a disguise for something less acceptable (Freud 1914). In a study of the ideational-perceptual auras of temporal-lobe epilepsy unpleasant "screen" memories have occasionally been noted, but none in which the memory was experienced with pleasure (Hill and Mitchell 1953).

The mechanism whereby the gratification of the fetish-need either became attached to the mechanism for the onset of the epileptic seizure or became the immediate precipitant thereof must, of course, remain obscure. Much the same applies to musicogenic epilepsy when intense emotion precedes the fit. Since, however, a seizure never occurred during marital sexual intercourse unless a safety-pin was fantasied, the direct physiological results of coitus and the physiological accompaniments of erotic excitement per se can be excluded as ætiological factors. The combination of a certain emotional state, mental set, and ideational content (the fetish) were necessary, and in this patient, as in musicogenic epilepsy, the operation of a conditioned reflex may be postulated (Shaw and Hill 1947). The similarity to musicogenic epilepsy is seen in the fact that sufferers from this condition are invariably musical and music lovers (Critchley 1937) but usually give up their musical activities when this causes them to suffer epilepsy. Such patients, however, are not compelled by the force of instinctual drives as in the present case.

The relief of temporal-lobe epilepsy by surgery has been previously reported, notably by Penfield and Flanigin (1950), Bailey and Gibbs (1951), and Green et al. (1951) in North America and by Falconer (1953) in this country. It seems, both from published reports and from our own experience, that the best results are obtained in those patients in whom a strictly unilateral and single electrographic focus is found at operation to be associated with a discrete pathological lesion lying within the resected part of the temporal lobe. No macroscopic lesion was found in this patient, but histological changes were observed subsequently. It is attractive to consider that these changes were causally related to the seizures, especially since the epilepsy improved after their removal. Possibly the changes may have been secondary to the epilepsy, but this patient had never had a major convulsion nor been significantly cyanosed during his seizures. The cessation of seizures after temporal lobectomy was anticipated from our experience with other cases of temporal-lobe epilepsy, and surgery was recommended to prevent not only further epilepsy but also further psychotic episodes and consequent social deterioration. However, the excellent result of surgery in the present case, assessed a year after the operation, has included, greatly to our surprise, relief from the fetishism. This patient no longer feels the need to obtain gratification from the viewing or fantasying of safety-pins, and with this change have come a turning of his libidinal interest towards his wife and an increase of potency and well-being.

Summary

A case of temporal-lobe epilepsy is described in which the viewing of a fetish object precipitated seizures and became the invariable trigger.

Relief not only of the epilepsy but also of the fetishism followed temporal lobectomy.

The relationship between the epilepsy and the fetishism is discussed.

We wish to thank Dr. R. W. Tibbetts for kindly referring this case and for the very helpful information he had obtained; Prof. A. Meyer for the pathological report, Dr. G. Pampiglione for the electrocorticographic studies, Dr. R. D. Hoare for the radiological examination, and Mr. V. Meyer, B.A., for the psychological testing.

REFERENCES

Bailey, P., Gibbs, F. A. (1951) *J. Amer. med. Ass.* **145**, 365.
Bratz (1906) Cited by Wilson (1928).
Critchley, M. (1937) *Brain*, **60**, 13.
Falconer, M. A. (1953) *Proc. R. Soc. Med.* **46**, 971.
Freud, S. (1914) Psychopathology of Everyday Life. London.
— (1928) *Int. J. Psycho-Anal.* **9**, 161.
Gibbs, E. L., Gibbs, F. A., Fuster, B. (1948) *Arch. Neurol. Psychiat., Chicago*, **60**, 331.
Gowers, W. R. (1881) Epilepsy and Other Convulsive Diseases. New York.
Green, J. R., Duisberg, R. E. H., McGrath, W. B. (1951) *J. Neurosurg.* **8**, 157.
Hill, D. (1953) *Proc. R. Soc. Med.* **46**, 965.
— Mitchell, W. R. (1953) *Folia psychiat. neerl.* **56**, 718.
Penfield, W., Flanigin, H. (1950) *Arch. Neurol. Psychiat., Chicago*, **64**, 491.
Shaw, D., Hill, D. (1947) *J. Neurol. Psychiat.* **10**, 107.
Wilson, S. A. K. (1928) *Neurology*. London; vol. 2, p. 1504.

LONG-TERM OXYTETRACYCLINE (TERRAMYCIN) THERAPY IN ADVANCED CHRONIC RESPIRATORY INFECTIONS

W. H. HELM
M.R.C.P.
MEDICAL CHIEF ASSISTANT, BROMPTON HOSPITAL, LONDON

J. ROBERT MAY
M.D. Camb.
SENIOR LECTURER IN BACTERIOLOGY, INSTITUTE OF DISEASES OF THE CHEST, LONDON

J. L. LIVINGSTONE
M.D. Lond., F.R.C.P.
CONSULTANT PHYSICIAN, BROMPTON HOSPITAL, LONDON

MANY chronic infections of the lung benefit from short courses of antibiotics, both during acute episodes, when they may be life-saving, and also when the chronic symptoms are severe. The improvement is, however, usually short-lived. More prolonged therapy may be essential in the treatment of lung abscess (Sutherland and Grant 1950) and chronic suppurative pneumonia (Nicholson 1952) and is successful in most of these cases, the infection often being entirely eliminated and not recurring. The problem in bronchitis, infective asthma, and bronchiectasis is different, since, when the treatment of whatever length has been stopped, the infection is almost certain to become re-established sooner or later. It is therefore only by repeated short courses or continued treatment that it may be possible to prevent relapses.

Franklin and Garrod (1953) used chloramphenicol for periods of up to five months in children with bronchiectasis with encouraging results, but abandoned this method of treatment when one patient died of aplastic anæmia. McVay and Sprunt (1953) treated 21 patients for an average of eleven months with 0·25 g. chlortetracycline (aureomycin) twice a day and compared the results with a control series of 9 patients treated with placebo tablets. They found a reduction of respiratory infections of more than 50% in the antibiotic group as compared with the controls.

The development of resistant organisms and the danger of toxic drug reactions have been the main reasons that this form of treatment has been so little used in the past. The present series was started following the excellent response of case A to continued oxytetracycline.

Clinical Material and Method

The cases selected were all advanced with considerable persistent disability. The assumption that the condition was infective was founded in the first instance on the macroscopic appearance of the sputum rather than the bacteriological findings. The dosage scheme of oxytetracycline was modified as the series progressed, but all patients started on at least 2 g. daily in three or four divided doses until the infection had been apparently eliminated or suppressed, when the dose was reduced to a level which was found sufficient to maintain the response; the usual maintenance dose was 1–1·5 g. in two or three doses. Recently the initial dosage used has been 3 g. daily given as 1 g. eight-hourly. The assessment of response was made on the patients' general condition and symptoms, the quantity and quality of the sputum, and results of bacteriological and cytological investigation. All patients who responded favourably have remained on treatment to the present time, providing the improvement has been maintained and unpleasant side-effects have not intervened.

Bacteriological Techniques

In order to avoid sampling errors due to irregular distribution of organisms in the sputum (May 1953a), all cultures were made after preliminary homogenisation of sputum specimens by pancreatin (Rawlins 1953), and, in an attempt to avoid failure to isolate some organisms owing to their irregular appearance in different sputum samples (May 1953a), at least three specimens from each patient were examined where possible before therapy was begun.

The quantity of pus in sputum specimens was estimated partly by macroscopic inspection and partly by cell counting (Rawlins 1954). Films of the liquefied sputum were stained with hæmatoxylin and eosin in order to distinguish between true pus and "pus" composed of eosinophils (Rawlins 1954, May 1954).

Results

TABLE I—RESULTS OF TREATMENT OF 38 PATIENTS WITH OXYTETRACYCLINE

Diagnosis	No.	Good early response	Remaining on oxytetracycline with benefit
Chronic staphylococcal bronchopneumonia	1	1	1 (30 months)
Bronchitis	17	15	9 (7–29 months)
Infective asthma ..	13	2	0
Bronchiectasis ..	7	6	4 (6–8 months)
Total	38	24	14

Chronic Staphylococcal Bronchopneumonia

Case A.—A 4-year-old girl had had a cough for a year with several pyrexial attacks which had been treated with penicillin, sulphonamides, and antral wash-outs. Her parents had noticed that her fæces were pale and bulky and that she did not tolerate fats well. On admission to hospital she was extremely ill, cyanosed, dyspnœic, and febrile. There were coarse crepitations throughout both lungs, and radiography of the chest showed diffuse coarse mottling and patchy consolidation. The sputum was purulent and *Staphylococcus aureus* was persistently cultured from it. The results of investigations of fæces for estimation of pancreatic activity were indefinite. The patient was treated in an oxygen tent with penicillin, streptomycin, and sulphonamides, followed by chloramphenicol. She did not respond to penicillin and the sputum culture contained resistant organisms. She improved for a short time on streptomycin and chloramphenicol, but the organisms rapidly became resistant and she again became very ill. She was then started on oxytetracycline 0·5 g. six-hourly. On the fourth day she began to improve progressively,

with great reduction of sputum and fall in temperature. The staphylococcus could not be cultured after the eleventh day, and after two weeks the oxytetracycline was stopped. She remained well for three weeks, but her cough, sputum, and fever then returned and the organism was again found in the sputum and remained sensitive to oxytetracycline but resistant to all the other antibiotics. Oxytetracycline was re-started with rapid and continued improvement, and she was discharged 2 weeks later, taking a maintenance dose of 0·25 g. 6-hourly. For the next two and a half years she remained well when taking the drug, but relapsed with reappearance of the organism each time it was stopped. When last seen a month ago she was well, but had a trace of purulent sputum, from which staphylococci were again isolated, still sensitive to oxytetracycline, though possibly slightly less so than previously. During her treatment she has also been taking pancreatin and vitamin-B complex.

The diagnosis in this case is probably fibrocystic disease of the pancreas with gross pulmonary changes. The indications for continued oxytetracycline were and still remain the strongest possible, but in spite of the life-saving effect to the present time the outlook remains extremely precarious.

Chronic Bronchitis

17 patients with chronic bronchitis were treated, of whom 15 responded well immediately. 9 of these have remained on treatment with benefit to the present time for periods of between seven and twenty months; 3 have been treated for more than a year. Of the 6 patients whose treatment has been stopped in spite of a good early response, 1 had mitral stenosis and bronchitis and was given oxytetracycline as a preparation and cover for the operation of mitral valvulotomy. It was hoped that after the operation further treatment would be unnecessary, but the bronchitis is reported to have relapsed. Another was maintained on treatment for eleven months, but the sputum then increased and the organisms were found to be resistant. 2 cases were no better symptomatically after reduction of infection; and a very ill girl of 16, although greatly improved by oxytetracycline, was unable to tolerate it for long owing to diarrhœa and abdominal discomfort. The last case responded well for two weeks, but his sputum then increased in purulence again and contained a resistant *Pseudomonas pyocyanea*.

The following 2 cases have been treated for the longest periods in this group:

Case B.—A housewife, aged 41, had been subject to winter bronchitis since childhood. Her symptoms became persistent in 1936, and for the past fifteen years she had had frequent febrile attacks, necessitating two to three weeks in bed and accompanied by increased cough, with about a cupful of yellow sputum daily, and increased dyspnœa. In April, 1953, she was admitted to hospital complaining of continuous cough, aching pain in the left side of the chest, dyspnœa on exertion, lethargy, and loss of weight. On examination she was thin and pale and her chest was full of rhonchi and crepitations. The radiograph showed honeycombing and patchy consolidation in both lungs. Her sputum amounted to 4–5 oz. daily, was mucopurulent, and contained *Hæmophilus influenzæ* sensitive to oxytetracycline. She was started on oxytetracycline 0·5 g. six-hourly; she improved considerably, but her sputum, although reduced in purulence, remained at about 4 oz. daily and continued to grow *H. influenzæ* after three weeks' treatment. She was discharged home on this dosage, and was seen as an outpatient two weeks later when she was greatly improved—"better than for years"—with only a few blobs of mucoid sputum daily. Following this she twice attempted to reduce the dose to 1 g. daily, but each time her sputum and cough increased, and were rapidly reduced again when the dose was increased to 2 g.

Since starting oxytetracycline over a year ago, she has had four "colds" and one attack of influenza with the normal symptoms of these infections but with only a slight increase in cough and sputum, which has remained mucoid. Previously she had been completely incapacitated by such infections. The patient is convinced that she has benefited enormously from continued oxytetracycline—it has been a "great boon" to her. She has put on a stone in weight and is much less dyspnœic, and her friends tell her that she looks a different person. There have been no unpleasant side-effects.

Case C.—A policeman, aged 51, had complained of a cough, and increasing shortness of breath for five years. In the past nine months he had been unable to walk a hundred yards or climb a few stairs without a rest. He was admitted to hospital in November, 1952, cyanosed, and distressed, with a grossly distended chest and signs of much bronchial spasm. He was treated with penicillin, chloramphenicol, antispasmodics, and breathing exercises; his condition improved, and he was discharged after a month. A few days later, during the fog, he relapsed with a return of all his symptoms and was readmitted extremely ill, very dyspnœic and cyanosed, with a rapid pulse-rate and a gallop-rhythm. His sputum amounted to 2 oz. daily and was purulent. He was treated with digoxin, penicillin, and chloramphenicol, but with doubtful improvement. He was then started on oxytetracycline 2 g. daily, which was continued for two weeks. This was followed by a reduction of sputum, which became mucoid, to a trace and great symptomatic improvement. The oxytetracycline was stopped for ten days and his sputum slowly returned to 1 oz. a day and became mucopurulent. The drug was re-started in a dosage of 0·25 g. three times a day, and he was discharged at the end of February on this dosage. It was most important to this man that he should continue his job for a further fifteen months to qualify for his pension, and he was allowed back to work in the police office at the end of March, 1953. In April he had a "cold" with increased cough and sputum, which became mucopurulent and contained *H. influenzæ*, but he remained fairly well and at work. The dose of oxytetracycline was doubled to 0·5 g. three times a day and his sputum rapidly decreased in quantity and purulence. He returned to beat duties in October and remained well through the foggy weather. In January, 1954, he became more breathless and on examination he had signs of early right-sided heart-failure. The oxytetracycline was increased to 2 g. daily and he rested in bed at home for three weeks. Since then he has been back working in the office; his sputum is mucoid, and there are no signs of heart-failure. He remains on 0·5 g. oxytetracycline three times a day.

The patient is convinced that oxytetracycline has "kept him going" for the past year. Except during his cold and the one recent setback, his sputum has remained of small quantity and clear, instead of being thick and yellow and about a cupful daily. He has been able to sleep comfortably, which was seldom possible previously, and is far less breathless on exertion. There have been no unpleasant side-effects. He is now able to qualify for his pension.

Infective Asthma

The assumption that the asthma was infective was based on the presence of macroscopically purulent sputum. Most of the 13 cases also had a history of close relationship between attacks and upper respiratory infections. The response to oxytetracycline was surprisingly poor, and in 11 cases there was no improvement. A probable explanation for this was provided by detailed cytological and cultural examination of the sputum of the patients, which revealed that the "pus" consisted almost entirely of eosinophils and that no pathogenic organisms could be isolated. When pathogens were found, the response accompanying their removal by oxytetracycline appeared to vary with the amount of true pus in the sputum.

One patient had sputum which looked macroscopically mucopurulent, but 80% of the cells were eosinophils. *H. influenzæ* was grown, and this organism disappeared during oxytetracycline therapy. The macroscopic purulence of the sputum diminished slightly and the differential count then showed 95–98% eosinophils. Symptomatically this patient was unchanged, or possibly slightly worse, since his sputum became thicker.

In another patient eosinophils constituted 60% of the cells in a macroscopically purulent sputum. *H. influenzæ* and pneumococci were cultured and were removed by oxytetracycline, following which there was a reduction in the purulence of the sputum and a rise to 90% in the relative proportion of eosinophils. Some benefit seemed to result clinically,

since a slight cold which developed during oxytetracycline therapy failed to cause any exacerbation of the chest condition—which was most unusual with this patient—but it was not considered that the response was sufficiently definite to justify continued treatment.

Bronchiectasis

Of the 7 patients treated, 6 responded well immediately with reduction of cough and sputum, and 4 have maintained this improvement on continuing treatment to the present time for periods of six to eight months. One of these has, however, had a return of asthma, of which she had been free for years, and despite the almost complete abolition of cough and sputum the outcome is most uncertain. Treatment was discontinued in 2 because of diarrhœa. One of these was an outpatient whose sputum was greatly reduced in a few days, but he was unable to tolerate even a much reduced dose.

Bacteriological Findings

The incidence of pathogenic bacteria in the sputa of this group of patients is shown in table II. *H. influenzæ* was isolated from all of 17 patients with bronchitis who

TABLE II—BACTERIOLOGY

Clinical diagnosis	Total cases	Pathogens in sputum		
		H. influenzæ	Pneumococcus	*Staph. aureus*
Chronic bronchitis..	17	17	2	1
Infective asthma ..	13	2	1	0
Bronchiectasis ..	7	6	0	0

had purulent sputum and from 6 out of 7 patients with bronchiectasis; the 7th was receiving oxytetracycline at the time of the first examination of his sputum. *H. influenzæ* was isolated from both of the patients diagnosed clinically as infective asthma, whose sputum contained true neutrophil pus. It was not found, however, in any sputum in which the "pus" consisted almost entirely of eosinophils.

In every patient whose sputum became mucoid during oxytetracycline therapy the bacterial pathogens disappeared, but they persisted in those patients who failed to respond. The purulent or mucoid character of the sputum of each patient could be correlated with the presence or absence of pathogenic bacteria, especially *H. influenzæ*. In many instances, however, the isolation of *H. influenzæ* from patients who failed to respond to oxytetracycline was difficult while they were still taking the drug, but when therapy was discontinued the organisms were easily found.

TOXIC EFFECTS

No serious toxic effects have been encountered. One very ill bronchitic girl of 16 had to stop treatment because of abdominal pain, diarrhœa, and vomiting. An outpatient with bronchiectasis had to stop even a reduced dosage owing to diarrhœa; one had a sore tongue for a few days; another had proctitis. About half of the patients experienced some fæcal looseness and frequency of defæcation, but most of these settled rapidly in spite of continued treatment. We have a definite impression that there is less abdominal upset in those starting treatment in bed in hospital than in outpatients.

Vitamin-B complex was given to most cases and to all those whose treatment has been maintained for long periods.

Discussion

Chronic Bronchitis

Whatever the original cause of this progressive disease, there is no doubt that bacterial infection is an important factor in the acute episodes which often accompany upper respiratory infections (Oswald 1954). These attacks consist of increased cough and sputum, which increases in purulence, and of fever, dyspnœa, loss of weight, and general malaise. At first they are, to a certain extent, self-limiting, since the patients usually return to their previous level of disability—or almost to it—without special treatment; but probably with each attack the irreversible lung-damage increases. For a time the normal body defences appear capable of suppressing these bacterial invasions, but it is doubtful if the infection is often eliminated, since pathogenic organisms can frequently be cultured from the sputum between the acute episodes. It is possible that the upper respiratory tract remains a source of reinfecting organisms. Ultimately the infection becomes firmly and permanently established and there are no relatively clear intervals. The pathological changes associated with the various stages of this process have been described by Reid (1954) from the early hypertrophy of the bronchial mucosal mucus-secreting elements to the advanced changes with purulent bronchiolitis, formation of abscess cavities, and obliteration or dilatation of the bronchiolar lumen in association with the alveolar changes of pneumonia, emphysema, and collapse.

The aim of continued antibiotic therapy in chronic bronchitis is the elimination or suppression of bacterial infection and the prevention of reinfection. When this can be achieved, considerable symptomatic improvement sometimes occurs and it is reasonable to hope that there may be some resolution of the pathological processes and that the downward progress of the disease may be checked.

Occasionally the elimination or reduction of infection is not accompanied by symptomatic improvement. Where this has been the case in the present series the lack of favourable response, or even deterioration, has been apparently due to increased viscosity of the sputum, with consequent difficulty in its expulsion, increased dyspnœa, and bronchial spasm. Possibly the combination of the antibiotic with a sputum-thinning agent or liquefier, such as iodine or trypsin, might be beneficial in these cases.

It would appear that this form of treatment is especially indicated in cases already complicated by cor pulmonale, when the elimination of infection is of great benefit and the prognosis is extremely serious. It is possible that similar treatment or intermittent dosage to cover upper respiratory infection may also be of great benefit in early cases.

Infective Asthma

Our experience in this group suggests that infective asthma can be diagnosed with certainty only when the purulence of the sputum can be shown to be at least partly due to true pus cells rather than to eosinophils. The presence of a pathogenic organism is strong confirmation. It is in these cases only that a favourable clinical response to antibiotics in any form or dosage is likely to be obtained. We have in fact seen cases respond in a most convincing way to short courses of antibiotics, including oxytetracycline, and it is possible that continued treatment of this sort would maintain the improvement and cut down relapses due to upper respiratory infections. In so complex a condition as asthma it would probably be unduly optimistic to expect more than this.

Bronchiectasis

This condition is in general probably unsuitable for long-term antibiotic therapy, since it is now usually a very chronic and relatively benign condition progressing very slowly and mainly by occasional acute episodes which can be aborted by short-term antibiotic treatment. The rapid downhill course with a fatal termination by pneumonia, empyema, cerebral abscess, or amyloid disease generally ascribed to this disease of old is now rarely seen, even in cases not amenable to surgical resection. Long-term treatment is, however, worth trying in the rare severe toxic cases unsuitable for or awaiting surgery, or where cough and sputum are

excessive. It is probably especially indicated in the combination of bronchitis and bronchiectasis which is often most disabling.

BACTERIOLOGY

The bacteriological findings in these patients were in complete accord with those reported previously (May 1953b). The fact that the presence or absence of pathogenic bacteria, especially *H. influenzæ*, closely paralleled the purulence of the sputum is strong evidence that these are indeed the pathogens in the infections studied. Removal of the pathogens did not cause complete disappearance of the sputum, but the quantity diminished and it became mucoid.

ANTIBIOTICS

Oxytetracycline and chlortetracycline are probably the most suitable preparations available in this country at present, since both are effective against the common pulmonary pathogenic organisms and severe toxic effects are infrequent. Mild abdominal disturbances are common with both; with chlortetracycline these tend to predominate in the upper gastro-intestinal tract, resulting in nausea and sometimes vomiting, whereas with oxytetracycline they mainly affect the lower tract, with diarrhœa and proctitis. Oxytetracycline in dosage as high as 7 g. daily has been given for periods of up to a hundred and twenty days in cases of pulmonary tuberculosis without serious complications (Pfefer et al. 1952, Tempel et al. 1953); but fatalities due to staphylococcal enterocolitis have been recorded with both antibiotics by several workers including Gardner (1953), Finland et al. (1954a), and Hay and McKenzie (1954). Although most of these deaths have been of patients already very ill and debilitated when antibiotic treatment was started, the serious nature of this complication should be remembered and the indications for treatment with these drugs carefully considered in every case. It appears likely that the newer preparation, tetracycline, will be equally effective and considerably less toxic (Finland et al. 1954b).

In the present series the early response to treatment has varied greatly even in those cases ultimately benefiting, and failure should not be assumed until at least three weeks' treatment has been completed or the organisms have been shown to be resistant. Possibly a higher dosage may be necessary in some patients with heavily infected areas and a relatively poor blood-supply.

Conclusion

There is little doubt that long-term antibiotic treatment is of considerable value in some cases of advanced chronic respiratory infection, but that reinfection is almost certain when treatment is stopped after whatever period. It remains to be seen in what proportion of cases, if any, treatment can be continued indefinitely without serious toxic effects, development of bacterial resistance, or overgrowth of fungi or other secondary organisms, and whether any improvement will be maintained in those having ultimately to stop treatment after a long period.

In the present state of experience and with the antibiotics now available, this form of treatment should probably be undertaken only where close clinical and bacteriological control is possible and should be restricted to advanced cases.

Although the results in this series have been variable, the successes achieved have been sufficiently definite and rewarding to encourage continuation of the treatment and the planning of a controlled series.

Summary

38 patients with advanced chronic respiratory infections were treated with oxytetracycline.

24 responded well immediately, whereas 14 did not.

Of the 24 patients responding well, 14 have remained on treatment, with benefit to the present time, for periods of between six and thirty months.

There have been no serious toxic effects.

We wish to thank Mr. G. A. Rawlins for his invaluable technical assistance; Messrs. Pfizer Ltd., who supplied the oxytetracycline used in the early cases; and Mrs. Brenda Wood for the secretarial work.

REFERENCES

Finland, M., Grigsby, E., Haight, H. (1954a) *Arch. intern. Med.* **93**, 23.
— Purcell, E. M., Wright, S. S., Love, B. D. jun., Mou, T. W., Kass, E. H. (1954b) *J. Amer. med. Ass.* **154**, 561.
Franklin, A. W., Garrod, L. P. (1953) *Brit. med. J.* ii, 1067.
Gardner, D. L. (1953) *Lancet*, ii, 1236.
Hay, P., McKenzie, P. (1954) *Ibid*, i, 945.
May, J. R. (1953a) *Ibid*, ii, 534.
— (1953b) *Ibid*, p. 899.
— (1954) In the press.
McVay, V. L., Sprunt, H. D. (1953) *Arch. intern Med.* **92**, 833.
Nicholson, H. (1952) *In* Progress in Clinical Medicine. Edited by R. Daley and H. G. Miller. London; p. 250.
Oswald, N. C. (1954) *Lancet*, i, 271.
Pfefer, L. M., Hughes, F. J., Dye, W. E. (1952) *Dis. Chest.* **21**, 123.
Rawlins, G. A. (1953) *Lancet*, ii, 538.
— (1954) In the press.
Reid, L. McA. (1954) *Lancet*, i, 275.
Sutherland, A. W., Grant, L. J. (1950) *Ibid*, i, 530.
Tempel, C. W., Pitts, F. W., Dye, W. E. (1953) *Ann. intern. Med.* **39**, 61.

Preliminary Communications

THE SEX OF TERATOMATA

THE observation by Barr and his associates [1] that sex could be determined by examination of non-mitotic nuclei in many different tissues has been exploited so far only in the study of hermaphroditism.[2] We have collaborated in work of this type [3] and have also explored the possibilities of some other applications.

We report here observations which bear closely on the origin and nature of teratomata. The assumption on which the work was based was this: (*a*) if teratomata are simply ordinary tumours with unusually great capacities for differentiation in many directions, they should consist of tissues of the same sex as the host; (*b*) if, on the other hand, they are in any sense derived from separate individuals, the sex should sometimes be independent of that of the host.

METHODS

Sections, fixed in half-saturated formol sublimate or formalin, were stained by the Feulgen technique. They were examined, as far as possible by both of us independently, without knowledge of each other's results or of the sex of the patient. Squamous epithelium was almost always used on the ground that this is the most reliable tissue for sexing. If in any substantial area of such epithelium more than 50% of the nuclei were found to contain sex-chromatin bodies, the tumour was regarded as female; if in a technically adequate preparation no such areas were found, the tumour was regarded as male.

RESULTS

Squamous Carcinoma

A preliminary investigation of a series of squamous carcinomata of various sites showed that, though difficulties were often caused by the nuclear irregularities common in such tumours, when recognisable at all the sex was that of the host.

Teratomata in Females

Ten ovarian dermoids were examined. The sex chromatin was particularly well seen in these, and all were clearly female. Two mediastinal teratomata in women were also female.

Teratomata in Males

This was a more difficult undertaking, since really well-differentiated testicular teratomata are rare. With the

1. Barr, M. L., Bertram, E. G. *Nature, Lond.* 1949, **163**, 676. Moore, K. L., Barr, M. L. *Acta anat.* 1954, **21**, 197.
2. Moore, K. L., Graham, M. A., Barr, M. L. *Surg. Gynec. Obstet.* 1953, **96**, 641. Barr, M. L. *Ibid*, 1954, **99**, 184.
3. Hunter, W. F., Lennox, B., Pearson, M. G. *Lancet*, 1954, i, 372. Polani, P. E., Hunter, W. F., Lennox, B. *Ibid*, July 17, 1954, p. 120.

help of Prof. Dorothy Russell we found nine suitable cases. Eight of these were testicular, and of these four were male; but to our astonishment four appeared to be female. In none of the four female cases were our preparations altogether satisfactory, and some doubt remained; but this was dispelled by the ninth case. This was a pineal tumour removed by Mr. D. W. C. Northfield from a boy, aged eight years. It was a well-differentiated "dermoid," with sebaceous glands, and the female nuclei were unmistakable. We have obtained from this boy a skin biopsy, which has proved that the rest of him is normally male. We believe, therefore, that of our nine teratomata in males four are male and five female.

DISCUSSION

We began this investigation in the firm belief that the views ably expressed by Nicholson [4] and Willis [5] as to the "ordinariness" of teratomata as tumours were correct; but these views must almost certainly be revised in the light of our findings. There are several possible hypotheses. The simplest would seem to be that teratomata derive from the fusion of two gametes (or, at least, of haploid cells) which would always produce an XX zygote in the female, but in the male might in theory produce XX, XY, or even YY. We will be able to examine this hypothesis in more detail when we are more certain that teratomata in the female are always of the one sex, and when we have more precise information on the proportions of the two sexes in teratomata in the male. We would be grateful for the opportunity of examining additional cases.

SUMMARY

In twelve well-differentiated teratomata in females and nine in males, the sex of the tumour cells was determined by Barr's method. All the teratomata borne by women were female; but of those borne by males four were male and five female.

We wish to thank Prof. J. H. Dible and other members of this department for their help, and Dr. M. G. Pearson and Mr. Duncan Murdoch for the original stimulus to undertake skin sexing. The work would have been impossible without the generous offer of material by Prof. Dorothy Russell; and we are especially grateful to Mr. D. W. C. Northfield and Mr. J. Crawford for their coöperation in the further investigation of the case of pineal teratoma.

W. F. HUNTER
M.B. Sydney

Department of Pathology, Postgraduate Medical School of London

BERNARD LENNOX
M.D. Durh., Ph.D.

THE HISTOCHEMISTRY OF PULMONARY HYALINE MEMBRANE IN NEWBORN INFANTS AND ITS INTERPRETATION

THE literature of "fœtal hyaline membranes" has been excellently reviewed by Tran-Dinh-De and Anderson.[6]

The histochemical nature of these membranes has not been definitely determined. Most workers report the presence of lipoid.[7] Potter [8] states that "usually little or no fat can be demonstrated." Miller et al.[9] found that the membranes contained no iron, collagen, amyloid, or elastic tissue but stained positively for a polysaccharide aldehyde. Blystad et al.[7] found no serum-proteins, red cells, mucus, or bronchiolar epithelium in the membrane.

In view of these inconclusive opinions a fuller histochemical investigation was undertaken; 150 lungs from infants dying in the first week of life were examined. In this material 41 cases of pulmonary hyaline membrane were detected; these included one set of triplets and one set of twins.

The histochemical stains and techniques shown in the accompanying table were applied to at least five specimens from different cases. The table shows that the material forming the membrane is Schiff-positive, but in the table glycogen, mucopolysaccharides, glycolipids, and phospholipids have been excluded. Therefore, according to Pearse,[10] hyaline membranes consist of either mucoproteins or glycoproteins. For this reason I thought that the material forming hyaline membrane might be endogenous mucus, especially as Farber [11] and Miller et al.[9] found such membranes in rabbits after bilateral vagotomy; Short [12] showed that, in rabbits after bilateral vagotomy, if regurgitated gastric contents was excluded, the animals were asphyxiated by the accumulation of laryngeal and bronchial mucus; and Reynolds [13] has shown that, in fœtal lambs during the later part of gestation, a large amount of mucin is

RESULTS AND SIGNIFICANCE OF HISTOCHEMICAL TESTS

Method	Results	Significance
Hæmatoxylin and eosin	An eosinophilic granular membrane lining the terminal bronchioles and atria	
Periodic acid Schiff (P.A.S.) reagent*	Positive	Polysaccharides (glycogen), mucopolysaccharides, mucoprotein, glycoproteins, glycolipids, and phospholipids
P.A.S. after chloroform methanol extraction*	P.A.S. positive	Excludes lipoids and lipids
Sudan IV on frozen section*	Negative for lipoid, except in one specimen †	Excludes lipoids and lipids
Sudan black "B" on frozen section*		
P.A.S. after digestion with saliva*	Positive	Excludes glycogen
Methylene-blue extinction test*	Basophilia positive above pH_4, negative below pH_4	Excludes mucopolysaccharides
Toluidine-blue*	Orthochromic (α metachromasia)	Excludes acid mucopolysaccharides
Hales colloidal iron alcian blue*	Negative	Excludes acid mucopolysaccharides
Testicular hyaluronidase extraction*	Stable	Excludes acid mucopolysaccharides
Millon coupled tetrazonium	Positive	Protein present
Masson's trichrome stain	Negative for muscle and collagen	Excludes muscle and collagen
Phosphotungstic acid hæmatoxylin*	Negative for fibrin except in one specimen†	Excludes fibrin
Foot's reticulin stain	Negative for reticulin	Excludes reticulin
Verhoff's elastic	Negative for elastic tissue	Excludes elastic

* Method of Pearse.[10]
† This specimen was from a case of congenital tracheo-œsophageal fistula.

4. Nicholson, G. W. Studies in Tumour Formation. London, 1950.
5. Willis, R. A. Pathology of Tumours. London, 1953.
6. Tran-Dinh-De and Anderson, G. W. *Obstet. Surv. Baltim.* 1953, 8, 1.
7. Hoccheim, K., Herrn. Geh. Medicinalrat Dr. Johannes Orth zur Feier seines 25-jährigen Professoren Jubiläums gewidmet. Berlin, 1903; Johnson, W. C., Meyer, J. R. *Amer. J. Obstet. Gynec.* 1925, 9, 151; Farber, S., Sweet, L. K. *Amer. J. Dis. Child.* 1931, 42, 1372; Farber, S., Wilson, J. L. *Arch. Path.* 1932, 14, 437; Blystad, W., Landing, B. H., Smith C. A. *Pediatrics*, 1951, 8, 5.
8. Potter, E. L. Pathology of the Fetus and the Newborn. Chicago, 1952.
9. Miller, H. C., Behrle, F. C., Gibson, D. M. *Pediatrics*, 1951, 7, 611.
10. Pearse, A. G. E. Histochemistry. London, 1953.
11. Farber, S. *J. exp. Med.* 1937, 66, 397.
12. Short, R. H. D. *J. Path. Bact.* 1944, 56, 355.
13. Reynolds, S. R. N. *Nature, Lond.* 1953, 172, 307.

secreted into the amniotic fluid from the nasopharynx and buccal cavities.

To determine whether there was any mucoprotein in human amniotic fluid Dr. I. Bersohn, of this institute, analysed amniotic fluid aspirated from the uterus of a pregnant woman at term. To avoid contamination from cervical mucus and blood, the fluid was aspirated directly from the uterus at the time of an elective cæsarean section. By micro-Kjeldahl analysis the amniotic fluid was found to contain 0·6 g. of protein per 100 ml. of fluid. The mucoprotein content was 80·0 mg. per 100 ml., and the polysaccharide content of the mucoprotein was 11·0 mg. per 100 ml. The proportion of mucoprotein to total protein in the amniotic fluid was 13%, whereas in normal human serum it is about 1%.

From these biochemical and histochemical findings and from published reports it can be postulated that the pulmonary hyaline membrane in newborn infants is formed from endogenous mucus which is derived from the nasopharynx, buccal cavity, and bronchial tree of the infant.

I wish to thank Dr. B. J. P. Becker, head of the Pathology Department, South African Institute of Medical Research, for his help and criticism; Dr. W. J. Pepler for advice and the preparation of many of the histochemical reagents; and Dr. I. Kessel, of the Transvaal Memorial Hospital for Children, for aid and advice on the clinical aspects.

South African Institute for Medical Research, Johannesburg — J. C. WAGNER M.B. Witwatersrand

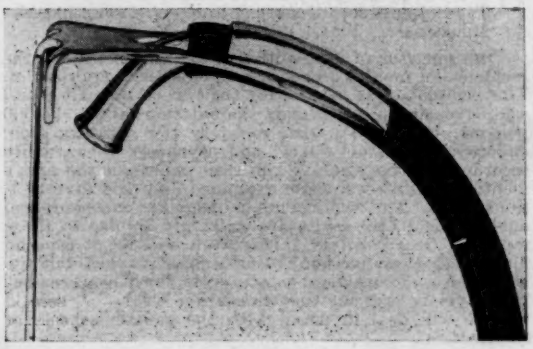
New Inventions

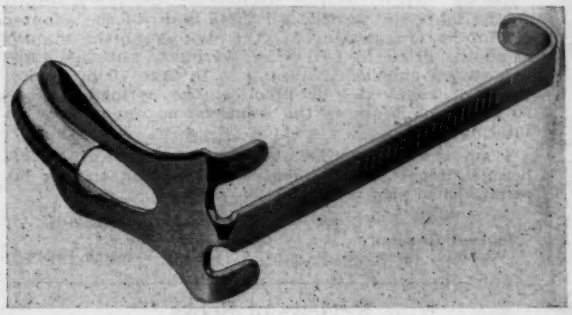
A MODIFICATION OF THE DOTT GAG

SINCE the introduction of endotracheal anæsthesia in the surgey of cleft palate, the prevention of compression or kinking of the endotracheal tube has been a major worry for the anæsthetist. Humby and Hawksley [1] described a modification of the Dott gag in which the endotracheal tube was connected in the mouth to a metal tube. Magill [2] has described a rubber-covered metal spiral tube which has had wide use for many years. Magill and Aserman [3] have used sheathed tubes and composite tubes, and Pask the reinforced latex tube. All these have disadvantages which have been discussed elsewhere.[4] In this new modification of the Dott gag, shown in the accompanying figures, the slot in the tongue blade extends to the tip, and the extension is roofed with an arched plate, thus being converted to a groove of semicircular section. The small blade will accommodate tubes to Magill size 5; the medium to size 7; and the large to size 10.

Extended trial at this unit has demonstrated the following advantages: (1) no reduction in the effective lumen of the tube; (2) complete absence of compression

1. Humby, G., Hawksley, M. *Brit. med. J.* 1943, i, 317.
2. Magill, I. W. *Proc. R. Soc. Med.* 1947, **40**, 544.
3. Aserman, D. *Ibid*, p. 542.
4. Davies, R. M., Danks, S. *Anæsthesia*, 1953, **8**, 275.





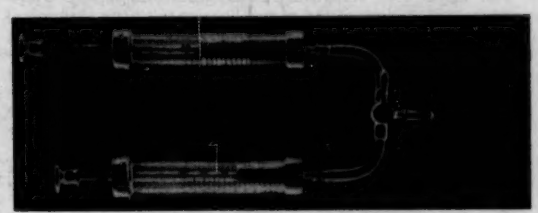
or kinking of the tube; (3) ease of introduction, the end of the groove being placed on the tube as it leaves the mouth, and the whole gag slid into place.

I am grateful to my surgical colleagues for their advice and willingness to try this modification. I am indebted for help in design and manufacture to Mr. H. Woodhall, of Allen & Hanburys, from whom the gag may be obtained.

Queen Victoria Hospital, East Grinstead, Sussex — RUSSELL M. DAVIES M.R.C.S., D.A.

A DOUBLE-BARRELLED SYRINGE

THE discovery of the brief and powerful relaxant action of succinylcholine has resulted in the widespread clinical use of this drug. Among its few disadvantages are the initial painful contractions which accompany the depolarisation of the motor end-plates, and which necessitate adequate anæsthesia. The action of this compound, however, is as rapid as that of any barbiturate; so, if relaxant and anæsthetic are injected together, the patient may still experience the pain. These unpleasant incidents seem particularly prone to occur when succinylcholine is given as a preliminary to a brief but repeated procedure, such as electroconvulsive therapy, in which minimal anæsthesia is an advantage. Moreover, the consequences may be particularly



unfortunate in this case, because the patient may default from further treatment. It is, however, in this same everyday procedure that a single-injection technique is most welcome. Nevertheless, several workers have decided to sacrifice the convenience of mixing the relaxant with the anæsthetic and have preferred to give the barbiturate first.[1]

In overcoming these difficulties, a suitable double syringe would be a satisfactory compromise which would permit the separate injection of the two drugs through one needle without the necessity for changing the barrel. Such instruments have been designed in the past, but they have generally proved inconvenient to use or have failed to maintain adequate separation of the solutions. The need for a manageable syringe of this type was therefore drawn to the attention of Messrs. W. H. Bailey & Son Ltd. (80, Bessborough Place, London, S.W.1), who developed the instrument shown in the accompanying figure. The 'Record' syringes, with interchangeable plungers, are each fitted with a spike, which engages in a corresponding retaining slot in the adaptor. At the junction of the adaptor is a T-shaped tap by means of which either barrel may be connected independently to the nozzle, which takes a standard

1. Montagu, J. D. *Acta psychiat., Kbh.* 1953, suppl. 87, p. 59.

'Record' needle. During sterilisation, the tap is turned to the mid-point so that all three limbs of the adaptor are intercommunicating. In the photograph the adaptor is shown fitted to two 5 ml. syringes, but the limbs are spaced sufficiently far apart to take 10 or 20 ml. units, if required. In practice, the syringe is easy to hold and it allows the solutions no opportunity to intermingle.

I am indebted to the physician-superintendent of this hospital, Dr. R. Ström-Olsen, for his interest and for his permission to publish this note.

J. D. MONTAGU
M.R.C.S.
Clinical Research Fellow

Runwell Hospital,
Wickford, Essex

Reviews of Books

Textbook of Operative Gynæcology

WILFRED SHAW, M.A., M.D. Camb., F.R.C.S., F.R.C.O.G., late surgeon in charge, gynæcological and obstetrical department, St. Bartholomew's Hospital, London. Edinburgh: E. & S. Livingstone. 1954. Pp. 436. £5.

Wilfred Shaw worked hard in his last months to complete this book whose publication he knew he would not see, and he had no opportunity to revise his text. Despite this handicap the book will remain for years an active memorial to a man who, for many reasons, is unlikely to be quickly forgotten. Shaw felt that there was a need for an English book to take its place beside comparable American and Continental volumes and, in the regretted absence of a revised version of Berkeley and Bonney's famous textbook, he was undoubtedly right. His own book is well produced and profusely illustrated.

It is naturally to those who are already doing this sort of work that the book will chiefly appeal, largely because many of Shaw's ideas on technique are original. The book is none the less welcome because some of the techniques described do not conform to more generally adopted procedures.

The method of ventrisuspension, for example, by transperitoneal threading of the round ligaments to the abdominal wall is less popular than the extraperitoneal method. Shaw, however, mentions the risk of intestinal obstruction if retroflexion should recur, thus leaving the round ligaments strung across the peritoneal cavity. The traditional steps in performing Wertheim's operation are also departed from none too clearly. A description of culdoscopic technique is surely worth a place whatever the views of surgeons as to its limitations, whereas the Paris technique of irradiating carcinoma of the cervix might well be omitted and more attention given to the Stockholm method.

But the book is full of good material, particularly on prolapse, and a great deal of attention has been devoted to the important subject of dealing with the results of unfortunate gynæcological surgery. It is to such pages as these that the practising gynæcologist is most likely to turn for reference and help.

The Oxford Medicine

Vol. 8. *Medical Treatment of Disease.* Editor: HENRY A. CHRISTIAN, A.M., M.D., LL.D., SC.D, M.A.C.P. F.R.C.P.[C.], Horsey professor of the theory and practice of physic, emeritus, Harvard University. London: Oxford University Press. 1953. Pp. 985. £10.

MANY books on treatment have the look of an abridged work on diagnosis, but the new volume of the loose-leaf Oxford Medicine cannot be criticised on this score. It begins directly with a good account of general measures of treatment—bed rest, diet, physiotherapy, the use of antibiotics, and the like—and continues with a full account of treatment of all the common and almost all the rare diseases. The firm incisive touch of the late Dr. H. A. Christian, who died as the book went to press, can be recognised in its structure and the subjects chosen for discussion. The contributors for the most part write with precision, though some are occasionally ambiguous. Many drugs are mentioned, but most of the unofficial preparations, being of American origin, may be unknown to British readers. Where possible the official counterparts of proprietary preparations are named, and dosage is given in the metric system. It is natural that authorities in Britain will differ from some of the opinions expressed here: our experience of partial gastrectomy, for instance, does not support the view that "in almost all of these patients digestion is far from normal and weight-loss and much post-prandial discomfort are the rule." For so full a book an index of less than 30 pages of large type seems inadequate: certainly it is difficult to trace in it some subjects dealt with in the text. Nevertheless this is a complete and well-balanced work, which will be kept up to date by the issue of supplementary pages from time to time.

Die Halswirbelsäule

Pathologie und Klinik. Dr. Med. G. EXNER, privatdozent für orthopädie, Marburg University. Stuttgart: Thieme. 1954. Pp. 140. DM. 21.60.

THIS is a straightforward, if somewhat pedestrian, account of the clinical anatomy, pathology, and therapeutics of disorders of the cervical spine, with most of the emphasis on degenerative arthrosis, which is blamed for a surprising number of more remote disturbances, including facial paralysis, Dupuytren's contracture, and visceral dysfunctions. A clear-cut distinction between the various thoracic-outlet syndromes is lacking; nothing is said of costoclavicular compression or the importance of median-nerve hazards at the wrist in this context; and the morbid anatomy of cervical intervertebral-disc prolapse is inadequately described. The therapeutic procedures included are limited to conservative measures, and the author is rightly opposed to operative intervention for disc lesions in general.

The Uncommon Heart Diseases

NATHANIEL E. REICH, M.D., F.A.C.P., F.C.C.P., clinical assistant professor of medicine, State University of New York College of Medicine. Springfield, Ill.: Charles C. Thomas. Oxford: Blackwell Scientific Publications. 1954. Pp. 516. 75*s*.

IT is doubtful whether the uncommon heart-diseases really justify a book of this size: it is certainly rather surprising to encounter in it diseases such as luetic aortic incompetence, cor pulmonale, thyrotoxic heart-disease, and constrictive pericarditis, which are fully dealt with in standard textbooks. For the rest a number of truly uncommon diseases are assembled under an ætiological classification which may in itself be useful as a diagnostic *aide mémoire*. The treatment of these rarities is descriptive—necessarily so because no fresh principles in cardiac pathology are introduced—while the accounts of the more familiar diseases add nothing to the standard descriptions. There is a good account of the diffuse collagen diseases, but this might be appropriate in a textbook of general medicine, since the cardiac signs, except in the case of rheumatism, are seldom prominent.

A Methodological, Psychiatric and Statistical Study of a Large Swedish Rural Population

TAGE LARSSON; TORSTEN SJORGEN. Copenhagen: Munksgaard. 1954. Pp. 250. Sw. Kr. 25.

THE purpose of the authors was to determine the incidence of mental illness in a Swedish country district. They employed as a basis for their work a small representative group of islands (population about 25,000 persons) in whose parish registers the sufferers from epilepsy, mental deficiency, and psychoses are carefully recorded by the vicars. The case papers of the area's mental hospitals were also examined and field investigations made. The findings are subjected to mathematical analysis, and the results are strikingly similar to those found in Great Britain. This work will be of especial interest to those contemplating similar surveys, but the book also is of considerable interest to the general reader. The style is critical, the translation clear. A second volume will deal in detail with the genetic aspects of the material.

IRON BY MOUTH

without alimentary disturbance

EACH fluid oz. of 'PROBEX' contains the total alcohol-soluble constituents of 2 ozs. of whole fresh beef liver, together with ferrous iron (in saccharated form), and erythrogenic components of the Vitamin B-complex.

'PROBEX' is primarily indicated in;

(1)

The difficult and resistant case of chronic hypochromic anæmia—where the response to treatment with iron alone is slow and ephemeral.

(2)

Anæmia of pregnancy — where the absence of gastro-intestinal side-effects is warmly welcomed.

(3)

Anæmia of infancy and childhood — where the palatability of the preparation ensures administrative success.

'PROBEX'

Trade Mark

BEEF LIVER WITH IRON

'PROBEX' is available in bottles of 8 fluid ozs.

Wyeth John Wyeth & Brother Limited, Clifton House, Euston Road, London, N.W.1

These are important features!

- ★ **Rapid and intense antibacterial activity even in the presence of blood, pus and other tissue fluids.**
- ★ **Less tendency than antibiotics and sulphonamides to give rise to resistant pathogenic strains.**
- ★ **Minimal tendency to provoke sensitization reactions.**
- ★ **Unimpaired activity against many organisms resistant to antibiotics, acridine compounds and other anti-infective agents.**
- ★ **Stable under normal conditions of use and storage.**

And these are the properties which immediately recommend 'Brulidine' as the ideal preparation for topical application in the prophylaxis and treatment of superficial mixed infections common to wounds, burns, ulceration and certain skin conditions.

'BRULIDINE'

trade mark *brand*

DIBROMOPROPAMIDINE ISETHIONATE CREAM

NON-STAINING · NON-GREASY

SUPPLIES:

0·15% cream in tubes of 1 oz. and containers of 1 lb.

AN M&B *brand* MEDICAL PRODUCT

Manufactured by

M&B

MAY & BAKER LTD

Detailed literature is available on request.

MA172

Distributors: PHARMACEUTICAL SPECIALITIES (MAY & BAKER) LTD · DAGENHAM

It has been demonstrated that there are distinct advantages in combined therapy in the treatment of infections and that there is considerable merit in the judicious combination of antibiotics and sulphonamides *in the prevention of bacterial resistance.*

The synergism in antibacterial effects which exists between penicillin and the sulphonamides is the reason for the success of *Sulpenin Tablets in clinical medicine.*

Sulpenin, in which penicillin is combined with sulphadiazine and sulphamerazine in balanced dosage, *provides a convenient means of applying combined* therapy in the treatment of many infections due to susceptible micro-organisms.

SULPENIN

Each tablet contains, penicillin 100,000 units, sulphadiazine 0.25 gramme and sulphamerazine 0.25 gramme. Tubes of 10 and bottles of 100 tablets.

ALLEN & HANBURYS LTD LONDON E 2
TELEPHONE BISHOPSGATE 3201 (20 LINES) TELEGRAMS GREENBURYS BETH LONDON

THE LANCET
LONDON: SATURDAY, SEPT. 25, 1954

Chlorpromazine

CHLORPROMAZINE, a derivative of the anti-histamine group of drugs, was introduced by French workers two years ago,[1] and its properties have since been very widely studied. Its therapeutic uses, broadly speaking, are five: (1) as a sedative; (2) as an anti-emetic; (3) to depress respiratory-tract reflexes; (4) to prevent shock; and (5) to facilitate reduction in body-temperature. On an earlier page of this issue Mr. SHACKMAN and his colleagues describe their observations on the "lytic cocktail," which includes chlorpromazine, along with promethazine and pethidine—two further anti-histamine derivatives. They find that the mixture neither causes hypothermia nor reduces oxygen consumption—an observation which accords with those of other workers, who have reported that chlorpromazine actually increases oxygen consumption.[2] *This drug has not yet been proved to* act on the temperature-regulating centres of the brain. *The "lytic cocktail" certainly promotes hypothermia* if the patient is exposed to a cold atmosphere and *hence a fall in oxygen uptake; but it does not do so* under normal conditions in the operating-theatre. *Deep anæsthesia or curarisation, both of which* prevent shivering, will help hardly less effectively to *bring about cooling*[3]; *but chlorpromazine possibly has* an advantage in that, by itself, it depresses the tone of skeletal muscle.[4] Any anti-shock properties of chlorpromazine may be due to its effect on the autonomic nervous system. SHACKMAN shows that the "lytic cocktail" increases peripheral blood-flow; and Dr. FOSTER and his co-workers, in an article which also appears in this issue, prove conclusively that in man chlorpromazine has an anti-adrenaline action. The suppression of vasoconstrictor influences at any level prevents the early circulatory changes associated with shock; such an action is not confined to chlorpromazine, which, however, exerts it in unusual degree. Because of this property the drug is useful in poor-risk patients undergoing major operations; and its administration reduces the necessary doses of other agents.

Whether the value of chlorpromazine in ordinary anæsthetic practice, even for major operations, is much greater than that of more conventional methods is undecided. But both in anæsthesia and in other fields it is valuable for its capacity to prevent vomiting (as Dr. ISAACS and Dr. MACARTHUR made clear in their article last week[5]); to provide efficient preoperative and postoperative sedation; and to suppress reflex activity, thus even allowing tracheobronchial stimulation with little or no anæsthesia. It has also been used successfully in the treatment of severe asthma,[6] of morning sickness in pregnancy, and of carcinomatous pain. In this country recent cautious reports on the use of chlorpromazine in psychiatry suggest that here it may be most useful in the short-term treatment of disorders associated with tension.[7–9] In psychiatry the drug is *given in large doses for several weeks, so it is not* surprising that toxic effects result most commonly *from this application of the drug. The risk of* jaundice, or of symptoms and signs of liver damage, is *now fully established. The hazard is greatest if the* liver is already diseased—at least one death probably *due to chlorpromazine has been recorded in a patient* with passive congestion of the liver—but the healthy *liver is not exempt.*[10 11] *Both SHACKMAN and FOSTER* comment on the hypotension and tachycardia that *follow intravenous injection of the "lytic cocktail"* or of chlorpromazine alone: and in some cases these *disturbances, which also follow administration of* large doses by mouth, persist after operation.[12] *Electrocardiographic changes suggesting damage to* the myocardium have been noted after intravenous administration.[2] Since the drug is very slowly excreted and is additive to most anæsthetic drugs—particularly barbiturates—prolonged unconsciousness may result from its injudicious use. Furthermore, though it is an effective postoperative sedative, its continued use may lead to apathy. These potential dangers can probably be avoided by care in administration; *but in anæsthesia the addition of yet another* agent to the many that may already be given to a *single patient should be avoided unless the benefit is* beyond dispute. It seems possible that some deaths *following anæsthesia are due to the complexity of* modern methods, which may make it impossible to *decide on the right form of treatment or resuscitation.*[13] Despite its valuable properties chlorpromazine has *not yet been proved to deserve a place in routine* anæsthesia.

Acute Obstruction of the Colon

THE morbidity and mortality from obstruction of the colon has seldom been carefully studied, perhaps because it is five or six times less common than obstruction of the small bowel. Consequently we are apt to forget how poor are the results of treatment in large-bowel obstruction. BECKER[14] has *described a series of 1007 cases of acute intestinal* obstruction admitted to the Charity Hospital, New

1. Laborit, H., Huguenard, P., Allaume, R. *Pr. méd.* 1952, 60, 206.
2. Dobkin, A. B., Gilbert, R. G. B., Lamoureux, L. *Anæsthesia*, 1954, 9, 157.
3. Dundee, J. W., Scott, W. E. B., Mesham, P. R. *Brit. med. J.* 1953, ii, 1244.
4. Burn, J. H. *Proc. R. Soc. Med.* 1954, 47, 617.
5. Isaacs, B., Macarthur, J. G. *Lancet*, Sept. 18, 1954, p. 570.
6. Robinson, K. C., Zuck, D. *Ibid*, 1954, i, 1349.
7. Garmany, G., May, A. R., Folkson, A. *Brit. med. J.* Aug. 21, 1954, p. 439.
8. Elkes, J., Elkes, C. *Ibid*, Sept. 4, 1954, p. 560.
9. Lancaster, N. P., Jones, D. H. *Ibid*, p. 565.
10. Chesney, W. M. *Ibid*, p. 591.
11. Boardman, R. H. *Ibid*, p. 579.
12. Baxter, R. W., Bolster, J. A., McKechnie, S. *Anæsthesia* 1954, 9, 79.
13. Stephenson, H. E., Reid, L. C., Hinton, J. W. *Ann. Surg.*, 1953, 137, 731.
14. Becker, W. F. *Surg. Gynec. Obstet.* 1953, 96, 677.

Orleans, between 1940 and 1949. In this series, only 15% of the patients with small-bowel obstruction died, whereas of the 205 patients with obstruction of the large bowel 33% died; the principal causes in this second group were carcinoma (49%), volvulus (25%), incarcerated hernia (12%), and intussusception (6%). MICHEL et al.[15] have studied 237 cases of large-bowel obstruction seen at the Charity and Touro Hospitals, New Orleans, between 1942 and 1952. There were 57 deaths; carcinoma accounted for 153 (65%) cases and volvulus for 38 (16%) cases. The difference between these two series in the importance of carcinoma as a cause may be due to different interpretations of "acute" in relation to obstruction, since it is almost impossible to say exactly when a chronic or subacute obstruction becomes acute. BRINDLEY[16] has suggested that carcinoma accounts for as many as 70–80% of cases of acute colonic obstruction. In this country no large series of cases of obstruction has been published since VICK'S[17] analysis of 6892 cases in 1932. In this series, of the patients with acute obstruction of the large bowel, apparently 40–45% died. We might be wrong to assume that the position has improved in the past two decades: a recent analysis by NEWELL[18] of 490 cases of carcinoma of the colon has revealed a mortality of 38% in patients with obstruction. Yet from New Orleans there is some evidence of progress, for a report by MICHEL and MCCAFFERTY[19] on 103 cases seen between 1942 and 1948 (included in the series studied by MICHEL et al.[15]) shows that the proportion of patients with colonic obstruction who died fell from 29% at the start of the study to 16·5% at the end.

In the treatment of acute obstruction of the colon some adverse factors are beyond control—one of these is the predominance of cases in older people, in whom carcinoma is the commonest cause—but many other factors can be countered. In diagnosing "intestinal obstruction" we should make it clear whether the obstruction is of the small or the large bowel; for these are virtually two different disorders—a point not yet brought home fully to students. In the one, fluid and electrolyte loss are the main manifestations; in the other, gaseous and fluid distension. The patient with large-bowel obstruction is not in danger of dying as a result of vomiting. The main hazard lies in damage to the bowel wall through distension and impaired blood-supply; and necrosis and perforation will not be one moment deferred by aspirating the stomach. A further hazard arises from the multiplication of organisms in the bowel lumen. "Decompression" by aspiration through a Ryle's tube does not affect the distension; and a Miller-Abbott tube, even if it reaches the level of the obstruction, may not be wide enough to keep pace with the accumulating fluid. Aspiration, so valuable in small-bowel obstruction, is thus dangerous where the obstruction is beyond the ileocæcal valve; for not only is this measure ineffective, but, by dulling the sense of urgency, it may delay operation. In the series described by MICHEL et al.[15] 37 patients were first treated by intubation, and 17 of these died. Only two-thirds of their cases were correctly diagnosed before operation; and the mortality, which was 16·5% in those diagnosed, was 40% in those which were not. Nor is it enough to establish that the obstruction is in the large bowel; an effort should be made to define the site, so that the laparatomy incision may be suitably placed. A "scout" radiograph of the abdomen, or even radiography after a barium enema, may help towards this end.

Even where the cause of obstruction is carcinoma the leading objective of operation should be relief of the obstruction. The mortality is increased by primary resection, which, moreover, is technically difficult (and hence liable to be imperfect) because of the distension. The Paul-Mikulicz operation—though a fairly safe combination of decompression and resection—does not include removal of affected lymph-glands; so it is best reserved for palliation where there are widespread metastases (a circumstance in which primary resection may be undertaken as an alternative). In most cases the emergency should be met by decompression with a colostomy, though in the cases of a neoplasm on the right side primary resection is easier and safer than it is with neoplasms elsewhere in the colon. Cæcostomy does not effectively relieve tension in the bowel when the lesion is in the distal half of the colon—as it is in 7 out of 8 cases where neoplasm leads to obstruction; and it has a high mortality of 42%.[14] The colostomy should be as close as possible to the growth so that both can be excised together, thus averting the need for a third operation.

15. Michel, M. L., Thompson, C. T., Reinstine, H. W., Stenter, R. R., Dale, D. B. *Ann. Surg.* 1954, **139**, 806.
16. Brindley, G. V. *Surg. Gynec. Obstet.* 1944, **78**, 556.
17. Vick, R. M. *Brit. med. J.* 1932, ii, 546.
18. Morgan, C. N. *Ann. R. Coll. Surg. Engl.* 1952, **10**, 305.
19. Michel, M. L., McCafferty, E. L. *Arch. Surg.* 1948, **57**, 774.

The Sex of Nuclei

THE tokens of our sex are plainly visible in every cell of our bodies. This knowledge we owe almost entirely to Prof. MURRAY BARR and his associates. In 1949 BARR and BERTRAM[1] were studying in the cat the effect of stimulating the hypoglossal nerve on the nerve-cells of the hypoglossal nucleus. They were interested in the movements of a small chromatin body which had already been described under various names, and which they called the nucleolar satellite. This body was found to be present in female cats only. Further work[2] from the same school has shown that this sex difference is much more widely distributed than was at first thought; the "sex chromatin," as the body was rechristened, could be found in the nuclei of most tissues in females of many species, including man. In man the characteristic appearance is most easily seen in skin. In the female about 70% of nuclei in biopsy specimens of skin contain a small chromatin body, about 1 μ in diameter, which is usually hemispherical and pressed against the nuclear membrane (the perinucleolar position found in the original observations is unusual). This chromatin body is readily distinguishable from the larger nucleolus, even with ordinary stains; and by using the Feulgen method for desoxyribonucleic acid—which is probably the best method even for routine use[3]—any risk of

1. Barr, M. L. Bertram, E. G. *Nature, Lond.* 1949, **163**, 676.
2. Barr, M. L., Bertram, L. F., Lindsay, H. A. *Anat. Rec.* 1950, **107**, 283. Moore, K. L., Barr, M. L. *J. comp. Neurol.* 1953, **98**, 213; *Acta anat.* 1954, **21**, 197.
3. Hunter, W. F., Lennox, B., Pearson, M. G. *Lancet*, 1954, i, 372.

confusion is avoided. In the male the sex chromatin is probably entirely absent, but the ordinary granularity of the general chromatin produces appearances in occasional nuclei (not often more than 5%) which cannot with certainty be distinguished from it. The method is not foolproof; but with good sections, a good microscope, and a little practice errors should be very few.

What exactly this characteristic body, the sex chromatin, may be is not clear. But BARR is almost certainly right in assuming that its appearance depends on the presence in the female nucleus of the XX pair of chromosomes, and that the very much smaller size of the Y member of the male XY pair accounts for its absence in the male. Yet size alone cannot account for it; for otherwise the single X chromosome in the male would produce a constantly present body of half the size; and none such is seen. Moreover the X chromosome in man is not an outstandingly large one. If HSU's diagram [4] can be interpreted literally, there are at least eleven pairs of chromosomes in man capable of producing chromatin masses bigger than the XX pair. Differences connected with that difficult material, the heterochromatin, and that even more difficult process, heteropyknosis, may be of greater significance here; GEITLER (who to some extent anticipated BARR) demonstrated sex differences in the nuclei of some insects depending entirely on heteropyknosis. Understanding of sex chromatin will depend on fuller knowledge of the means whereby the chromosome cluster converts itself at the end of mitosis into the apparently very different resting nucleus; and this question is bound up with the even more fundamental one of the means whereby the genes located on these same chromosomes influence the course of events in the surrounding cytoplasm.

The knowledge gained so far in this field has been used mainly to determine the true sex of pseudohermaphrodites. The method was introduced by BARR and his school [5]; its value has been confirmed elsewhere,[3 6] and it is now in fairly general use. BARR's most recent conclusions, based on results in 27 patients, include a sober appraisal of the value of the method. Most of the cases submitted to him fall into one of two groups. The first are genetic females, modified towards a masculine appearance by endocrine abnormalities (usually the adrenogenital syndrome); here recognition of the true sex is valuable, for the appropriate endocrine treatment may produce a relatively normal woman. The second group are genetic males, modified in the direction of feminity by unknown causes; here knowledge of the true sex helps little in most cases, for we have no remedy except the very incomplete one of plastic surgery for the genotypical male who looks like a female and has been brought up in accordance with his phenotype. In both these conditions a skin biopsy may be the shortest way to a firm diagnosis. Few people will deny that the genetic sex should usually be the deciding factor when there is doubt as to the way a child should be brought up; but the decision may depend on early diagnosis, and a skin biopsy is both easier and more certain than laparotomy, which hitherto has been the main diagnostic aid.

The most recent advances in this field have been made on this side of the Atlantic. POLANI, HUNTER, and LENNOX [7] have demonstrated that at least some cases of so-called ovarian agenesis are genetic males. Their three cases were all examples of Turner's syndrome [8] (dwarfism, webbed neck, cubitus valgus, coarctation of aorta, ovarian agenesis); the presence in these apparent females of coarctation, ordinarily so much commoner in males, led POLANI to suspect the truth. No results have yet been reported in cases of uncomplicated ovarian agenesis, but some of these are likely to prove also to be male: "ovarian agenesis" may be truly testicular agenesis, the extreme end of the series of male pseudohermaphroditism. Experimental work in France [9] has shown that intra-uterine castration can produce feminoid development in a male embryo; and this conclusion is endorsed by detailed morphological studies.[10] The recent claim[11] that an XXY chromosome structure was present in the testis of a "true" hermaphrodite may remind us that full studies of chromosomes in mitosis (perhaps by the methods of HSU [4]) may give even more information than the techniques discussed here; but at present chromosome studies are rarely practicable.

Work at King's College Hospital, London,[12] has revealed a sex difference in neutrophil polymorphs which obviously parallels that in cells with more regular nuclei. In this work DAVIDSON and SMITH noticed small drumstick projections from the nuclei of occasional polymorphs in women; these seem to be simply the sex chromatin in another form. Sometimes polymorphs have "non-specific" projections of similar shape, but in the hands of DAVIDSON and SMITH differentiation has proved completely reliable. If other workers find this method equally reliable it will be widely applied; for, since only an ordinary blood-film is needed, there is a saving both in trouble to the patient and in laboratory resources. Comparative studies with the two methods are obviously needed. DAVIDSON and SMITH have already demonstrated sex differences of this type in a very wide range of species, and these differences may prove as widely distributed as the polymorph itself.[13]

The latest application of BARR's method, reported on an earlier page of this issue, breaks entirely new ground. Dr. HUNTER and Dr. LENNOX have shown that, though all the teratomata they have examined in women have female nuclei, some at least of those in men have nuclei of the opposite sex. The significance of this for that favourite subject of debate among pathologists—the origin of teratomata—is obviously great. We hope that this is the forerunner of other new applications. BARR has thrown a large stone in the pond, and the ripples are still widening.

4. Hsu, T. C. *J. Hered.* 1952, **43**, 167.
5. Moore, K. L., Grahame, Margaret A., Barr, M. L. *Surg. Gynec. Obstet.* 1953, **96**, 641. Barr, M. L., Hobbs, G. E. *Lancet*, 1954, i, 1109. Barr, M. L. *Surg. Gynec. Obstet.* 1954, **99**, 184.
6. Marberger, E., Nelson, W. O. *J. clin. Endocrin.* 1954, **14**, 768.
7. Polani, P. E., Hunter, W. F., Lennox, B. *Lancet*, July 17, 1954, p. 120.
8. Turner, H. H. *Endocrinology*, 1938, **23**, 566. Albright, F., Smith, Patricia H., Fraser, R. *Amer. J. med. Sci.* 1942, **204**, 625.
9. Jost, A. *C.R. Soc. Biol. Paris*, 1947, **141**, 126. Raynaud, A., Frilley, M. *Ann. Endoc., Paris*, 1947, **8**, 400.
10. Wilkins, L., Fleischman, W. *J. clin. Endocrin.* 1944, **4**, 357.
11. Greene, R., Matthews, D., Hughesden, P. E., Howard, A. *Brit. J. Surg.* 1954, **41**, 54; *Ibid*, 1953, **40**, 263.
12. Davidson, W. M., Smith, D. R. *Brit. med. J.* July 3, 1954, p. 6.
13. Unpublished data presented to the Pathological Society of Great Britain and Ireland, July, 1954.

Annotations

MYOCARDIAL TOXOPLASMOSIS

SINCE the recognition, some fifteen years ago, that the toxoplasma could cause disease in man, and the development and refinement of serological techniques for the diagnosis of toxoplasmosis, the disease in its congenital and acquired forms has become well recognised. The congenital form is usually thought of as being characterised by a tetrad of signs: choroidoretinitis, mental retardation, hydrocephalus or microcephaly, and intracerebral calcification. In the acquired form the manifestations usually recognised are a pyrexial illness with rash and splenomegaly and sometimes lesions of the central nervous system.

In almost all countries where serological investigations have been made, a rising incidence of toxoplasma antibodies has been found in the normal population as age increases, indicating that the vast majority of infections with the toxoplasma must be subclinical and symptomless. There are cases, however, where an illness that cannot be explained in any other way is accompanied by positive serological tests for toxoplasmosis regarded as of diagnostic titre; in these cases it is a fair assumption (although there is no absolute proof) that the serological findings are related to the illness. Accordingly the original ideas of the presenting symptoms and signs of both congenital and acquired toxoplasmosis have had to be widened, and gradually the picture has become almost as protean as that of syphilis. It is now recognised that congenital toxoplasmosis has many different clinical pictures, varying with the age at which the fœtus was infected, and there is a no-man's-land where the difference between congenital and acquired toxoplasmosis is extremely indefinite.

Elsewhere in this issue Dr. Paulley and his colleagues report what appears to be a not uncommon accompaniment of toxoplasmosis—namely, myocardial involvement. In their cases the parasite has not been isolated; but the isolation of toxoplasmas is a long-drawn-out procedure, and negative results are of no great significance. The serological tests in these cases leave little doubt that the myocarditis was caused by toxoplasma.

Several problems arise from this work. The two instances where more than one member of the family was affected raise the question whether these were examples of chronic acquired, rather than congenital, toxoplasmosis; and these cases once again draw attention to the possibility that pregnancy may light up a quiescent toxoplasmosis in the mother, who thus infects the fœtus. It has been held that a mother with toxoplasmosis infects only one of her children, the disease thereafter burning itself out, although some doubt has been thrown on this contention. In the two instances described by Dr. Paulley and his colleagues where more than one member of the family was affected, not all the siblings were involved; and Paulley et al. rightly conclude that such evidence as there is suggests that the infection was acquired rather than congenital. (Nevertheless the question whether quiescent toxoplasmosis is lit up by pregnancy will have to be answered, because of the necessity for giving the mother who has borne a baby with toxoplasmosis reasoned advice on whether she may have further children.) The fact that all these cases of myocardial toxoplasmosis have occurred in Suffolk suggests to Paulley et al. that this disorder may be due to a strain of toxoplasma with a special affinity for heart-muscle. It is, of course, established that the toxoplasma has an affinity for the eye and the brain; but no difference has yet been established between strains examined in the laboratory. While there may exist in Suffolk some peculiar strain of toxoplasma, it is at least as likely that local geographic or nutritional conditions have contributed to the invasion of the myocardium; or this finding in one part of the country may be due simply to coincidence together with clinical alertness. Be that as it may, there is now no doubt that in cases of Fiedler's myocarditis, unexplained cardiomegaly, and idiopathic cardiac hypertrophy the possibility of infection with toxoplasma should be considered.

COMPLICATIONS OF MUMPS

IN many acute virus diseases, such as smallpox, poliomyelitis, measles, and mumps, the presence of myocarditis is now suspected. In Stockholm 564 cases of mumps were routinely investigated by electrocardiography on admission to hospital, and cases in which the findings were abnormal were followed up throughout convalescence.[1] Evidence of acute myocardial damage were found in 6·6% of the 127 adults and in 2·8% of the 437 children; such changes were more than five times commoner in girls than in boys. The changes included S–T depression of more than 0·15 millivolts, flattened T waves, atrioventricular block, and extrasystoles; they persisted, on average, for four weeks. In several cases tachycardia, transient murmurs, and transient enlargement of the heart were also found.

The electrocardiographic changes were detected mostly in patients with complicating meningo-encephalitis (diagnosed by very broad criteria). Lumbar puncture was done not only when nuchal rigidity (relatively rare) was present but also where there was vomiting, dizziness, and headache. Pathological changes in the cerebrospinal fluid and/or appreciable electro-encephalographic changes, were found in 54% of cases in the series, although only about half of these had even slight symptoms of meningo-encephalitis. Neuritis affecting the sixth or eighth cranial nerve was found in 3 cases.

Orchitis occurred in no less than 67·7% of the males over 14 years of age in the Stockholm series. The treatment of 6 cases of mumps orchitis with long-acting corticotrophin in a dosage of 100 international units intramuscularly is recorded in another investigation.[2] In 5 of these 6 cases the acute inflammation subsided promptly and even dramatically. The inflammation tended to recur after thirty-six to forty-eight hours; but a second dose usually put an end to this complication. Biopsy of the inflamed testicles has shown that the profuse exudation causes a profound disturbance of spermatogenesis,[3] which, it seems, corticotrophin may prevent by blocking the exudative reaction.

MALARIA IN SARDINIA

THE results of attempts to eradicate malaria and its vector, *Anopheles labranchiæ*, from Sardinia up to 1950 have already been described.[4] The story is now continued to the end of 1952.[5] In 1951, when UNRRA, the Economic Coöperation Administration, and the Rockefeller Foundation had ceased to finance the Sardinian project, the Italian government continued the residual spraying with dicophane on a small scale, funds being scarce; and the Sardinian government continued the attempt to exterminate *A. labranchiæ*, although experience had shown that this was unlikely to succeed without intolerable effort and expense. In fact, these mosquitoes or their larvæ were found in 1951 in more than 90% of the districts which had been treated with larvicides in 1950.

In 1952 both authorities carried on their campaigns, but only the regional organisation (now named Centro Regionale Anti-Insetti) was at work continuously, the

1. Bengtsson, E., Örndahl, G. *Acta med. scand.* 1954, **149**, 381.
2. Solem, J. H. *Ibid*, p. 341.
3. Nordlander, E. Thesis, University of Stockholm, 1948.
4. *Lancet*, 1954, i, 817.
5. Aitken, T. H. G., Maier, J., Trapido, H. *Amer. J. Hyg.* 1954, **60**, 37.

Italian national organisation being hampered again by lack of funds. The "larviciding" was done with fuel oil containing 1% 'Triton X-100' without any dicophane (again a measure of economy), and it took more than 89,000 man-days to inspect the whole island between the beginning of April and the end of October. A pointer to the distribution of *A. labranchiæ* is the fact that in 1951 and 1952 56% and 62% respectively of the sectors found to harbour this mosquito were so found by the examination of only 5 larvæ or less. In six distinct localities in the north of the island the scouts found *A. sacharovi*, which also carries malaria. This species had not been found in Sardinia either in the initial survey in 1946 or since, in which time more than 1,000,000 anopheline larvæ were examined. Although all the attempts to eradicate *A. labranchiæ* from Sardinia have failed, the residual population of this species remaining at the end of 1950 has not increased rapidly. The anopheline population of Sardinia is still dominated by the abundance of *A. claviger* and *A. algeriensis*, which do not carry malaria in Sardinia. The latter species is apparently colonising regions previously occupied by *A. labranchiæ*.

When we turn to malaria, the story is more cheering. The disease continued to regress in 1951, in which year the provincial health officers reported only 3 primary cases and 6 relapses. One of the primary cases was in all probability transmitted by a blood-transfusion given to a child, aged 7 years, as part of the treatment of acute favism. In 1952 there was no case of malaria, either primary or relapsed.

PROLONGED ANTIBIOTIC THERAPY

OXYTETRACYCLINE (terramycin) clearly needs to be prescribed with discrimination. In seriously ill or very young patients it produces severe effects commonly enough for the practitioner to hesitate before using the drug at all; and if he decides to give it he must find the smallest dose that will be effective, and must avoid prolonging this treatment unnecessarily. Such caution is dictated by experiences such as those of Hay and McKenzie,[1] who used the drug extensively to treat largely symptomless and mostly youthful carriers of intestinal pathogens, and of others[2] who have observed serious side-effects in very ill or much-debilitated patients.

On the other hand, Dr. Helm and his colleagues at the Brompton Hospital remark, on p. 630 of this issue, that such mishaps should not lead us to believe that oxytetracycline is invariably unpleasant or dangerous. In certain types of advanced, chronic, respiratory infection they have administered oxytetracycline for periods ranging from six to thirty months, usually with real benefit. The 38 patients treated in this way received at least 2 g. daily, divided into three or four doses, until the infection had been apparently eliminated or suppressed; thereafter maintenance dosage, usually of about 1–1·5 g. a day in two or three doses, was given. Helm et al. raised the initial dosage to 3 g. daily, divided into three eight-hourly doses; and this improved the results. No serious toxic effects were observed in these 38 patients during either the initial or later treatment. But one very ill girl, aged 16, had to stop treatment because of abdominal pain, diarrhœa, and vomiting; one outpatient with bronchiectasis had to discontinue even a reduced dosage because of diarrhœa; one had a sore tongue for a few days; and one had proctitis. About half of the patients had some looseness of fæces, which did not persist. Those who started treatment in bed in hospital seemed to have less abdominal disturbance than those who were treated as outpatients. Vitamin-B complex was given to most patients, and to all whose treatment with oxytetracycline was continued for long. Of the 38 patients treated, 24 responded well to the initial treatment and 14 did not. Of the 24 patients who responded well 14 have remained on treatment, with continued benefit so far, for periods of six to thirty months.

Clearly this method should not be uncritically applied to all patients with chronic respiratory infection. In the Brompton Hospital cases, will the improvement continue; or will there develop resistant organisms or overgrowth of fungi or other secondary organisms? These questions, which are in the minds of Dr. Helm and his associates, indicate that prolonged treatment with oxytetracycline should probably be restricted at present to advanced cases where close clinical and bacteriological control is possible. In the Brompton Hospital series cases of chronic bronchitis and bronchiectasis have responded well; whereas of 13 cases of infective asthma only 2 showed a good early response and none benefited from continued administration of oxytetracycline. The probable explanation of such a disappointing outcome is that the infective component is here not of major importance. This is borne out by the observations that the pus cells in the sputum of most patients were eosinophils, and not neutrophils as in chronic bronchitis and bronchiectasis; and that cultures of sputum contained no pathogens.

There is some hope that the newer drug, tetracycline,[3] will be equally effective and much less toxic. Meanwhile long-continued antibiotic treatment seems to offer hope to some patients with distressing, and distressingly common, chronic respiratory infectious conditions. But the cases to be treated in this way should be selected first on clinical grounds and again assessed after the sputum has been examined cytologically and bacteriologically. Only cases where the sputum contains pus, and pathogens likely to respond well, should be selected; the patients should preferably have their initial treatment in bed; and they need to be carefully observed and their treatment adjusted in the light of their response. This amount of trouble in diagnosis and follow-up is not disproportionate to the likely benefit in suitable cases.

XANTHOSIS CUTIS

XANTHOSIS cutis is a yellowish discoloration of the skin found in a small proportion of patients with severe diabetes, tuberculosis, or myxœdema. In diabetics it is believed to be due to an increase of circulating carotene, presumably caused by the inability of the liver to convert this lipochrome to vitamin A. Linn[4] has observed yellowish pigmentation in the nasolabial folds and on the palms and soles of patients with severe acute poliomyelitis. In the more severe cases of poliomyelitis this yellow coloration of the face is associated with a dusky malar flush. He claims to have detected the pigmentation in nearly all of 2500 patients with acute poliomyelitis of varying type and severity, although at times the yellow colour was very slight and detectable only with practice. He has also found that this form of xanthosis cutis is consistently present in patients with acute encephalitis associated with mumps, measles, infectious mononucleosis, and endemic typhus fever.

Linn reports the following findings in patients with the pigmentation: (1) the serum-carotene level was generally within normal limits, but was occasionally raised; (2) the blood-cholesterol level was low in nearly all patients with poliomyelitis (it is known to be high in diabetes and the other conditions in which xanthosis cutis has been previously described); (3) the albumin-globulin ratio in patients with poliomyelitis was usually normal, though sometimes the globulin level was low and the albumin level high; (4) the erythrocyte-sedimentation rate was normal in uncomplicated acute poliomyelitis, possibly as a result of the normal or low serum-globulin level; (5) when the palms of patients with poliomyelitis or encephalitis were exposed to filtered ultraviolet light, a yellow-green fluorescence was produced instead of the

1. Hay, P., McKendrick, P. *Lancet*, 1954, i, 945.
2. See leading article, *Ibid*, p. 967.
3. Finland, M., Purcell, E. M., Wright, S. S., Lowe, B. D. jun., Mou, T. W., Kass, E. H. *J. Amer. med. Ass.* 1954, 154, 561.
4. Linn, H. *Med. J. Aust.* 1954, i, 581.

normal dusky-blue colour. This yellow-green fluorescence is also given off by the albumin fraction of human serum (which contains all the carotene in the blood).

These findings indicate, Linn believes, that the substance responsible for xanthosis cutis is carotene. He suggests that the serum-carotene level may be raised in the preclinical or early clinical stage of acute poliomyelitis, and that the excess is distributed in the skin by the time the patient comes under observation, by which time the serum-carotene level is usually normal. He has found the fluorescence test a useful diagnostic aid in acute poliomyelitis, especially for distinguishing this disease from tuberculous meningitis.

SURGERY OF THE ABDOMINAL AORTA

THE two common degenerative diseases of the abdominal aorta—fusiform aneurysm and bifurcation thrombosis (Leriche's syndrome)—have in the past few years received much attention from the surgeon. The commonest site for an aneurysm is the segment below the renal vessels, which are seldom involved to such a degree as to forbid excision of the aneurysm. In 27 consecutive cases DeBakey and Cooley[1] decided against operation only once, and in this case the large fusiform aneurysm involved the entire abdominal aorta and its resection would have interrupted the entire visceral blood-supply. Aortography has apparently little value in the selection of suitable cases.[2]

Colt[3] found that the average duration of life in patients with aneurysms of the abdominal aorta was about one year after the appearance of the symptoms, so Julian et al.[2] suggest that an aneurysm growing rapidly in size while the patient is under observation, or causing a good deal of pain, has such a poor prognosis that surgical treatment is imperative. For aneurysms which are causing no symptom or are discovered accidentally, the prognosis may be much better although rupture, dissection, or extensive thrombosis may occur at any time. With greater experience and facility in the preservation and use of free arterial grafts during the past decade, surgical opinion has turned completely away from the older and not very satisfactory methods of introducing wire into the aneurysmal sac or layering the surface with 'Cellophane' or dicetyl phosphate. Many impressive series have now been reported in which the aneurysm was excised and replaced by a free arterial graft, freeze-dried or preserved in nutrient medium at 5°C.[1 4] The mortality of these big operations is surprisingly low, for the patients are elderly (6 of DeBakey's were over 70) and the degenerative vascular disease is widespread and not restricted to the aorta. The graft may be sutured by everting or coapting sutures,[5] and there is little trouble with leakage. As the level of aortic occlusion necessary for the grafting is below the renal vessels, there is little or no danger of ischæmic damage to the spinal cord or other vital organs, such as may follow clamping of the thoracic aorta. There is, however, one potential hazard: acute arterial thrombosis in the vessels of the leg during the period of surgical ischæmia. DeBakey and Cooley[1] do a lumbar sympathectomy at the time of operation and inject 10 mg. of heparin into the aneurysm just before occluding the aorta, and they find that these measures prevent complications. Abdominal aortic aneurysms have been treated by excision and grafting since 1952, and so far there has been no evidence of deterioration in the graft.[1 2]

Insidious thrombosis of the aortic bifurcation produces intermittent claudication in thigh, buttocks, or lower legs, impotence, and limb fatigue. This lesion may occur from the third to the fifth decades of life, and in the absence of extensive atherosclerosis. The nutrition of the leg is at first satisfactory, although the pulses are absent. Aortography demonstrates with precision the site of the lesion and the extent of the collateral circulation.[6] Although the underlying pathological change is most commonly atherosclerosis, deWolfe et al.,[6] who followed 29 patients for five years, found that only 3 had deteriorated within that period, and they suggest that the condition is not an inevitably progressive one. In some patients, however, rapidly disabling claudication or severe limb ischæmia develops, heralding gangrene; and in such circumstances excision of the thrombosed segment and replacement by a graft has been repeatedly advocated since Oudot's first successful case.[7] Free vein grafts, bilateral lumbar ganglionectomy, and endarterectomy seem to have less to recommend them. DeBakey and Cooley have excised and grafted the aortic bifurcation in 17 cases without a fatality in hospital. The operation is essentially similar to that for aneurysm except that the thrombosis, which often originates in or extends into the iliac vessels, needs a larger graft, and often more ends are anastomosed. When the occlusive thrombosis extends throughout the length of the external iliac artery, it may be easier to remove with a wire-loop stripper similar in design to the Mayo vein stripper, and in such cases DeBakey and Cooley recommend that the femoral arteries be exposed by separate incisions below the inguinal ligament in order to ensure that the lumen is patent. The patients are much better after operation, and it is reassuring that Oudot's original case[7] was alive and well three years after grafting.

Although many doubts have been expressed about the wisdom of arterial grafting in the small arteries of the limb, it appears very probable that aortic grafting can offer results superior to any other treatment in many of the aortic lesions, and the newer plastic materials are rapidly coming into the picture.[8] Small numbers of cases, studied for short periods and by teams skilled and experienced in the selection of cases and in special techniques, may not represent the true state of affairs. But, for the first time in the history of these conditions, there is real hope.

MUSCULAR HYPERTROPHY OF THE LOWER ŒSOPHAGUS

MASS radiography and the increasing activities of the thoracic surgeons have revived interest in many of the rarer and more benign lesions of the mediastinum One such lesion (though it is doubtful whether in an uncomplicated form it could be seen on a miniature radiograph) is idiopathic diffuse muscular hypertrophy of the lower œsophagus. Sloper[9] describes six cases of this rare condition diagnosed at necropsy, and also the first reported case to be diagnosed clinically and successfully treated by resection. This patient was a man aged 41, who was originally admitted to hospital with a duodenal ulcer, but was found to have dysphagia and œsophageal spasm, which was observed radiographically. These manifestations progressed, and three years later exploration and biopsy revealed the lesion. Bilateral vagotomy resulted after some months in replacement of spasm by aperistaltic inertia of the œsophagus, but no relief of the dysphagia. Finally the affected segment of œsophagus was resected, and an œsophagojejunostomy done with good results.

This is the first reported case in which symptoms have been severe enough to demand treatment. All the twenty-five previously published cases, and Sloper's other six cases, were detected incidentally at necropsy. Most were in elderly men. The lesion is a simple thickening of the œsophageal muscle in its lower half, usually ending abruptly at or just above the cardia, unaccom-

1. DeBakey, M. E., Cooley, D. A. *Ann. Surg.* 1954, **139**, 763.
2. Julian, O. C., Grove, W. J., Dye, W. S., Javid, H., Sadove, M. S. *Ann. intern. Med.* 1954, **41**, 36.
3. Colt, A. H. *Quart. J. Med.* 1927, **20**, 331.
4. Bahnson, H. T. *Ann. Surg.* 1953, **138**, 377.
5. Sauvage, L. R., Wesolowski, S. A. *Surgery*, 1954, **36**, 227.
6. deWolfe, V. G., LeFevre, F. A., Humphries, A. W., Shaw, M. B., Phalen, G. S. *Circulation*, 1954, **9**, 1.
7. Oudot, J. *Mém. Acad. Chir.* 1951, **77**, 636.
8. See *Lancet*, Sept. 4, 1954, p. 483.
9. Sloper, J. C. *Thorax*, 1954, **9**, 136.

panied by any other œsophageal lesion. Lymphocytic or eosinophilic infiltrations are seen in almost half the cases. Lesions of the myenteric plexes have been described once.

The cause and character of the lesion remain obscure. The association of myomata, the commonest benign tumours of the œsophagus, with hypertrophy is too common to be ascribed to chance,[10 11] but the hypertrophy in itself has no neoplastic features. Œsophageal hypertrophy is also associated with pyloric hypertrophy,[9 12] but the nature of pyloric hypertrophy in adults is itself uncertain, and it is not clearly related to the congenital lesion. Sloper suggests that the œsophageal lesion may be a work hypertrophy due to vagal spasm, and that it may be in some way related to achalasia—either as a compensated form of this disorder or as a *forme fruste*. This or a congenital origin seems at present the most likely explanation.

CORTISONE AND HYDROCORTISONE IN SKIN DISEASES

CORTISONE appears to cure no skin disease permanently, but it averts death in some hitherto fatal conditions (e.g., pemphigus) and it relieves many distressing chronic disorders (e.g., severe atopic dermatitis). Sulzberger and Witten [13] have investigated the effects of long-term cortisone therapy in skin disease. They report no untoward reaction to the drug, and no instance where progressively larger doses were required to relieve symptoms. Surprisingly, there were no cases of addiction in their series: many patients became dependent on the drug, but when some other treatment gave relief it was always possible to wean them from the drug. Some patients benefited from oral doses of as little as 5 mg. every third day, which seems to indicate that suggestion played a part.

Sulzberger and Witten decided that it was justifiable to give very large initial doses to patients with the hitherto fatal diseases, especially as the unavoidable side-effects of such doses (e.g., glycosuria and psychosis) disappear when the dose is reduced. An initial daily dose of 300–1000 mg. was required in some cases. If the initial dose was more than 500 mg., this was reduced at the rate of 50 mg. a day; if between 25 mg. and 500 mg., at the rate of 25 mg. a day; and below 25 mg., reductions at the rate of 5–12·5 mg.—often at intervals of three to four days. Total relief of symptoms was not attempted, since a dosage great enough to give this is apt to cause side-effects. Sulzberger and Witten suggest that to avoid side-effects a maintenance dosage of not more than 100–125 mg. a day should be reached as quickly as possible; many patients tolerated such a dosage for more than a year. If exacerbations occur the dose must be temporarily increased, and the case frequently reviewed. Patients receiving more than 300 mg. daily were given a salt-poor diet, supplemented by 3 g. of potassium chloride daily. Continued high dosage made repeated laboratory examinations necessary, and from time to time long bones were examined radiographically for signs of decalcification. When the dose was less than 75 mg. daily the patient's weight, blood-pressure, and mental state were reviewed fortnightly. Sulzberger and Witten believe that with these precautions, and in suitable cases, the long-term treatment of dermatoses with systemic cortisone is safe and effective.

Local applications have mostly proved ineffective; but hydrocortisone has been found useful in the local treatment of several distressing minor skin disorders,[14–16] even when applied generously to wide areas. A 1% hydrocortisone ointment has been applied to an eighth of the body surface for as long as eight months without ill effects.[17] Local hydrocortisone is apparently of little or no value in the treatment of psoriasis, chronic discoid lupus erythematosus, or alopecia areata; but it is sometimes effective in chronic itchy dermatoses, including atopic dermatitis, anogenital pruritus, and eczema of the eyelids and external auditory passages. Improvement is almost always temporary, and relapse ensues after the drug is withdrawn.

The main disadvantage of local treatment is its cost. In the National Health Service hydrocortisone ointment is available only through hospitals, which pay 7*s.* 2*d.* for 5 g. of 1% hydrocortisone-acetate ointment, and 14*s.* 4*d.* for the same quantity of 2·5% ointment. A gramme of ointment covers little more than six square inches of skin, a prescription may have to be repeated indefinitely; clearly this remedy should be applied temperately, after the need for it has been fully established. Gratifying as it may be to relieve a patient's pruritus in this way, one should first be sure that she is not excreting sugar in her urine or secreting a primula in her bedroom.

DOMINANT MUTATIONS AND MULTIPLE TUMOURS

DOMINANT-GENE mutations responsible for the development of multiple tumours usually affect one system of the body only—for example, multiple telangiectasia and Lindau's and von Recklinghausen's diseases and most instances of multiple polyposis of the colon. But as each gene is invariably present in every body cell it is not surprising to find that genes may cause tumours in several systems. Perhaps the best-known example is epiloia, where the facial skin, brain, retina, heart, and kidney may all contain tumours of local tissue cells. Three new instances of multiple tumour production by dominant mutations have recently been reported, two of them involving multiple polyposis of the colon.

Oldfield,[18] in this country, describes a family where two brothers and a sister in a sibship of seven were affected with multiple sebaceous cysts as well as multiple polyposis of the colon. Their father and paternal grandmother had sebaceous cysts, but were not known to have polyposis of the colon. One of the three children born to them, aged 12, has sebaceous cysts, but no symptoms yet of polyposis of the colon. In a much more extensive pedigree from the United States, Gardner and Richards [19] have reported multiple polyposis of the colon in constant association with multiple tumours of membranous bones, epidermoid cysts, and subcutaneous fibromata; here too a dominant mutation was probably responsible. A third remarkable condition, comprising adenomata of the pituitary, parathyroid, and pancreatic glands, has been known for 50 years. The adenomata are functional, and the patients may show acromegaly, hypercalcæmia (with cystic bone disease), and hypoglycæmia. More than a score of instances of this condition have been recorded, but until recently they have all been sporadic. Last year, however, a family was reported from Massachusetts [20] in which a father and his daughter were both affected; and this year Wermer [21] has described a family in which a father and four of his seven daughters had the condition (two sons died in infancy). Probably in these cases a dominant mutation is also responsible. In most instances, however, the first victim is probably affected too early to have children, and so appears as a sporadic case.

10. Heimke, K. *Virchows Arch.* 1939, **304**, 79.
11. Rose, J. D. *Brit. J. Surg.* 1936, **24**, 297.
12. Guthrie, K. J. *Arch. Dis. Childh.* 1945, **20**, 176.
13. Sulzberger, M. B., Witten, V. H. *J. Amer. med. Ass.* 1954, **155**, 954.
14. Alexander, R. M., Mannheim, S. D. *J. invest. Derm.* 1953, **21**, 223.
15. Robinson, H. M., Robinson, R. C. V. *J. Amer. med. Ass.* 1954, **155**, 1213.
16. Malkinson, F. D., Wells, G. C. *Brit. J. Derm.* 1954, **66**, 300.
17. Sulzberger, M. B., Witten, V. H., Smith, C. C. *J. Amer. med. Ass.* 1953, **151**, 468.
18. Oldfield, M. C. *Brit. J. Surg.* 1954, **41**, 530.
19. Gardner, E. J., Richards, E. C. *Amer. J. hum. Genet.* 1953, **5**, 139.
20. *New Engl. J. Med.* 1953, **249**, 990.
21. Wermer, P. *Amer. J. Med.* 1954, **16**, 363.

Special Articles

DIAGNOSTIC PROBLEMS IN THE FEEBLE-MINDED

L. T. HILLIARD
M.A., M.B. Camb., D.P.M.
CONSULTANT PSYCHIATRIST AND PHYSICIAN-SUPERINTENDENT
LYDIA MUNDY
B.Sc.
PSYCHOLOGIST
THE FOUNTAIN HOSPITAL, TOOTING, LONDON

MORE than 58,000 persons are detained in mental-deficiency institutions in England and Wales, and 9000 more, including many children urgently needing care, are awaiting admission. The present acute shortage of beds for mental defectives would be partly resolved if (*a*) some of the present occupants could be safely returned to the community and (*b*) some of those about to be certified as mental defectives could be dealt with by other means.

Many adult patients kept in mental-deficiency institutions as feeble-minded persons have intelligence-quotient (I.Q.) levels between 80 and 100 and are not strictly speaking intellectually defective. Our purpose here is to suggest that these patients need more detailed psychiatric investigation, more accurate diagnosis, and more helpful treatment. Until their problems are recognised and understood, no proper provision will be made for them and they will remain a burden on the community.

CONTRIBUTING FACTORS

Subnormal intelligence as measured by intelligence tests is admittedly not the sole factor in the diagnosis of mental deficiency. But where the intelligence is well within the normal range, emotional or social maladjustment in itself should not be considered evidence of that arrested or incomplete development of mind which is the legal criterion of mental deficiency. Otherwise all cases of psychopathy and antisocial behaviour could be diagnosed as mental deficiency. As Crawford (1953) remarks: "It seems to me that nowadays if you are delinquent, you have to be abnormally intelligent to be sent to Borstal. If you are a bit below the average, there is a very good chance of your becoming mentally deficient . . ."

This situation has arisen because the authorities concerned with certification seem to base their judgment mainly on social criteria. But types of social maladjustment may show great qualitative differences. Degrees and types of failure are important points which the criterion of "social inefficiency" leaves indefinite. It cannot provide us with reliable norms of failure of social adjustment due to intellectual defect as distinguished from failure due to other causes. Jastak (1949) says: "Few individuals are obviously feeble minded. The longer and the more thoroughly they are studied the less feeble minded they become."

Emotional immaturity due to an organically determined failure of mental development can reasonably justify the diagnosis of mental defect. The evidence for such a diagnosis will be either direct from the history or indirect in that the immaturity cannot be attributed to an abnormal home life, emotional deprivation, or faulty training. But when alleged high-grade mentally-defective adults with an average I.Q. and with behaviour problems are investigated in detail, very few are of this type. Most come from broken or unsatisfactory homes and have been early sent to institutions with emotional starvation and inadequate schooling.

There is often a superficial similarity in the behaviour of these two types of so-called defectives. Both lack judgment, are impulsive, and are heedless of consequences. Both easily become social misfits or behaviour problems. But whereas the first group will benefit from training with other defectives in the shelter of a mental-deficiency institution, the other group, usually with the higher I.Q., will resent the implication of mental deficiency, rebel against authority and detention, and upset the other defectives. They are often the disturbed and difficult patients in the closed wards of mental-deficiency institutions; their aim is to escape and get even with society which they feel has wronged them.

MENTAL TESTING

As the main clinical implication of mental deficiency is an intellectual inadequacy, mental testing is important. It should be done by professional psychologists using standardised procedures. They are prepared for this work by several years of academic study as well as clinical training and experience. The psychologist administering a test must not only be a skilled examiner but also a person who can make the patient feel at ease and instil a feeling of confidence. Furthermore, the test situation may reveal to the competent observer physical or emotional aspects which may enable him to evaluate the whole picture when assessing the patient's mental capacity. An experienced examiner is not satisfied with presenting a quantitative result only, but he relates the given I.Q. to the patient's personality and background. Where the I.Q. is subnormal he is concerned to elucidate the cause. Kanner (1948a) believes that the following conditions are especially apt to mask intellectual potentialities wholly or in part:

"1. Visual difficulties. 2. Impairment of hearing. 3. Slurring of word comprehension and word deafness. 4. Specific reading, writing, or numerical disability. 5. Negativism. 6. Emotional blocking. 7. Frequent petit-mal attacks or subclinical dysrhythmic phenomena. 8. Influence of sedatives. 9. Schizophrenic withdrawal."

In the hands of the specialist psychometry can be an invaluable contribution to the psychiatric diagnosis.

TABLE I—TEN CONSECUTIVE ADMISSIONS ARRANGED IN DESCENDING ORDER OF WECHSLER I.Q.'S

Case no.	Diagnosis	Social factors	Age	Wechsler I.Q.			Progressive matrices I.Q. equivalent
				Verbal	Perf.	Full	
44	Psychopathic personality	Unstable home ..	17	109	104	108	99
*	Depression ..	Rejection by mother ..	24	99	100	99	96
40	Emotional instability	Had illegitimate child	34	94	89	92	86
*	Hysteria ..	Patient illegitimate and homeless	36	78	103	90	82
41	Hysteria with obsessional features	Mother deaf. Father angina pectoris. Tense home situation	26	88	90	88	75
42	Emotional instability	Charged by mother with assault	33	91	83	86	73
43	Partially deaf	Homeless. Had illegitimate child	55	82	88	84	80
*	Emotional instability	Mother epileptic and father drunkard	21	79	83	79	83
39	Psychopathic personality	Patient illegitimate and had 2 illegitimate children	18	76	87	79	83
*	Stammer ..	Patient illegitimate and had illegitimate child	25	76	78	76	78

* Indicates patient transferred from convent.

TABLE II—132 CERTIFIED FEEBLE-MINDED PATIENTS CLASSIFIED BY I.Q. LEVELS

I.Q.	Admissions to South Side Home 1948–1953	Convent patients 1950–1953	Total I.Q. 50–79	Total I.Q. 80–110
50–69	9	12	21	
70–79	19	21	40	
80–89	31	16		47
90–110	14	10		24
Totals	28 45	33 26	61	71
	73	59	132	

But the I.Q. alone is meaningless—just as the social criteria by themselves are insufficient—unless it is related to the total personality. Thus the diagnosis of feeble-mindedness necessitates a thorough psychiatric investigation. Kanner (1948b) also says: "Every person possessed of a lower than average I.Q. has obtained a right to be studied with full attention to the genetic, physical, cultural, educational, and emotional determinants which have culminated in his specific type of integration."

A PILOT SURVEY

When we reviewed the adult female patients admitted to the South Side Home of the Fountain Group it was observed that many were only slightly intellectually defective. A detailed study of the last 10 consecutive admissions was therefore made (table I).

An analysis of the essential features of these cases reveals the following:

Intelligence

The psychometric results show that 4 had I.Q. levels of 90–108, that is, were of average intelligence according to their Wechsler-Bellevue full-scale I.Q.s: 5 were intellectually dull but still within the normal range. Only 1 was a borderline defective. 2 might have been regarded as borderline defectives, but their verbal scores were reduced by educational backwardness and they achieved higher matrices results.

Psychopathology

2 had psychopathic personalities and 2 showed hysteria, 1 with marked obsessional features. 3 were emotionally unstable and 1 suffered from depression with schizoid features. 1 patient stammered.

Physical Handicap

The only patient not included in the above group was partially deaf. Partial or high-tone deafness, if unrecognised, often obscures the results of mental testing and complicates education and social adjustment.

Social Factors

3 were themselves illegitimate and 2 of these and 2 others had had illegitimate children. All had either no home or unsatisfactory homes.

Thus, these 10 women were people of low-average to borderline intelligence, who either suffered from a degree of neuroticism, or had a poor social background, or were abandoned in childhood or adolescence. As in other branches of mental health, the effects of illegitimacy and disadvantageous home conditions are particularly important because they contribute to the incidence of certification.

A LARGER SAMPLE

The picture presented by this small group led us to classify by I.Q. level a more statistically reliable sample of 132 women (table II). This comprised: (*a*) all the feeble-minded admissions to the South Side Home of the Fountain Group over a five-year period, amounting to 73, and (*b*) 59 certified feeble-minded patients in a convent in south-west London. We found that 71 patients out of the 132 have I.Q. levels over 80—i.e., 54% of these so-called high-grade patients are not in fact intellectually defective.

Our classification is based on the results of tests standardised for adult age-levels—namely, the Wechsler-Bellevue intelligence scale and Raven's progressive matrices. All but 10 cases were tested by one of the writers, thus ensuring consistency. Only first-test results on admission were taken for this classification. Some of these patients scored significantly higher later on, particularly after their rehabilitation, but these figures are not considered here. During this investigation the correlation between these two tests was calculated and found to be 0·92, P.E. ± 0·01 (sample: 110 subjects, I.Q.s 60 to 110, ages 16–60).

40 of these admissions to the South Side Home were transfers from ten different institutions and the rest (33) were direct admissions. 12 of the convent patients were later transferred to the South Side Home, but they are not included among the 73 South Side patients.

REHABILITATION

During the five years under review 85 feeble-minded patients, including 12 transferred from the convent, were admitted to the South Side Home (table III). Though some of these patients have been in the home only a relatively short time, 39 have already been discharged from the Mental Deficiency Acts. A further 21 are earning their living working in the community on licence. This means that of 85 consecutive admissions 70% have been successfully rehabilitated. Their weekly earnings range from £3 in factories to £5 as hospital domestics, and their resocialisation represents an economic gain to the community. Instead of occupying relatively expensive hospital beds these patients have not only made vacancies for more urgent cases but have also become self-supporting.

TABLE III—ANALYSIS OF REHABILITATION OF 85 FEEBLE-MINDED PATIENTS ADMITTED CONSECUTIVELY TO THE SOUTH SIDE HOME

—	I.Q.	Total	Discharged	Licence	Daily licence	Still at S.S.H.	Transferred
73 S.S.H. admissions	65–79	28	9	2	7	7	3
	80–110	45	22	4	6	2	11
12 convent transfers	65–79	5	2	1	1	1	—
	80–110	7	6	—	—	1	—
	Totals	85	39	7	14	11	14

14 patients were transferred to other institutions either because they were unable to cope with parole conditions or, for physical reasons, had little prospect of returning to the community and simply required custodial care. For instance, 1 was deaf and rather paranoid, 2 were rather old and frail, 2 asked to be transferred elsewhere, 4 were disturbing to other patients, 4 were persistent absconders, and 1 was certified under the Lunacy Act. The successful rehabilitation of a majority of patients under hostel conditions depends in part on the removal from the group of the minority who cannot benefit from the opportunity of rehabilitation and whose presence has a bad effect on the morale of the others.

The patients admitted to South Side Home were a representative sample of the types of high-grade patients in mental-deficiency institutions today. Their histories showed that many of them were "difficult" cases and their behaviour in other institutions had not led to their successful licensing or discharge. We believe that their successful rehabilitation was mainly due to their response to individual handling in a special environment. It is significant that of 12 patients transferred from the convent to South Side, 8 are already discharged, 2 more are working on licence and only 2 have not been successfully placed in the community. These figures suggest there may well be other patients who might benefit from a similar opportunity to rehabilitate themselves.

DISCUSSION

Educational Backwardness

Backwardness in school subjects is often equated with mental deficiency. There are, however, many different reasons for such retardation—absence from or frequent change of school, inefficient teaching methods, or temperamental or emotional difficulties of the child, to mention only some of the most common causes (Burt 1937, Schonell 1948).

There is usually a need for special classes in the three R's for high-grade adults in institutions, to fit them for life in the outside world; and experience shows that they can be taught. As it is harder to learn in later life than when young, these patients could probably have been taught as children had suitable opportunities and incentive been provided.

Moral Deficiency

Only 4 of the 45 high-grade admissions to the Fountain Hospital were certified as moral defectives. Though the others were diagnosed as feeble-minded, it was evident from the wording of many of their medical certificates that this concept of moral deficiency was in the mind of some of the writers of the certificates and determined the diagnosis of mental defect. The legal definition of the category of moral deficiency in the Mental Deficiency Act is mental defectiveness coupled with "strongly vicious or criminal propensities" requiring care, supervision, and control for the protection of others. But these propensities by themselves are not sufficient to justify certification as a mental defective. There should also be evidence of mental deficiency which is "a condition of arrested or incomplete development of mind existing before the age of 18 years whether arising from inherent causes or induced by disease or injury." It is hardly permissible to classify an unstable adolescent who plays truant from school and repeatedly absconds from home, but who is of average intelligence, as a "moral defective." It is even more doubtful whether actual delinquency, such as stealing, in people with I.Q. levels between 80 and 100 should be dealt with under the Mental Deficiency Acts. Such people need effective treatment that will rehabilitate them as responsible members of society. In general, mental-deficiency institutions, being designed for the subnormal, do not have such facilities. If certified as mentally deficient, offenders of average intelligence tend to be stigmatised for life, so that their rehabilitation becomes much more difficult.

Illegitimacy

The young mother of low-average I.Q. level, with an illegitimate baby may also present a difficult problem. The behaviour which led to her pregnancy may have been the result of a psychological disturbance, sometimes brought about by the mother herself having been illegitimate or abandoned in childhood. The baby usually satisfies several of the mother's emotional needs and can be a factor in her rehabilitation—a fact not usually recognised by the authorities dealing with this problem. Individual assessment is needed rather than routine separation of mother and child with institutionalisation of both.

Institutionalisation

The effects of institutional life on the individual within the normal range of intelligence should also be considered. Clinical observation suggests that full allowance must be made for the following factors:

(*a*) The limited opportunities and stimuli of institutional life, with its usually monotonous routine and lack of ordinary social experience, make the general orientation of any person in such circumstances inadequate. Current events in the outside world tend to become meaningless when the individual does not feel related to them and eventually his or her range of thought becomes very narrow.

(*b*) The more normal a person is, intellectually and emotionally, the more frustrating will he find institutional life. Depending on the institution and the patient's capacity for strain, these frustrations will sooner or later bring about emotional difficulties, with more or less neuroticism. The most common effects seem to be anxiety states with lack of self-confidence, or alternatively truculent or aggressive behaviour due to an overcompensation of underlying inferiority feelings. In some cases, depending on the personality, either hysterical features or a withdrawn attitude may become emphasised.

(*c*) An important factor is the age at which institutional life begins and how much chance the individual has had to have a mother's care and to form personal relationships in the first few years of life (Bowlby 1951). Much has been written on disturbed interpersonal relationships in adults, but little has been said about the utter lack of opportunity that many institutionalised patients have for making normal relationships. In such circumstances it is only natural that the personality is often underdeveloped and immature and there is little character-formation.

One or other of these three aspects may predominate in the experience of each institutionalised person, or they may occur together. Their effect is to create the impression of mental deficiency.

CONCLUSIONS

For many high-grade mental defectives such as we have discussed here, long-term institutional care is unsuitable. It only complicates the clinical picture. The best results, both for society and the individual, will be obtained when a psychiatric diagnosis, based on a careful assessment of the social and other ætiological factors, determines the appropriate treatment. The true mental defective will benefit greatly from long-term training in a mental-deficiency institution. Alternative accommodation is needed, however, for the rehabilitation of emotionally disturbed and socially maladjusted people whose intelligence is near normal (sometimes called the pseudo-feeble-minded). Small hostels with as much parole as possible, and with facilities for educational, industrial, and social training suitable for people of normal rather than defective intelligence, will give more rapid and more lasting results in the type of case we have described.

SUMMARY

Some patients detained in institutions for mental defectives have I.Q. levels between 80 and 100+ and are not intellectually defective. Classifying them as such gives a false impression of the problem of mental deficiency.

Such patients may be socially incompetent, but in many cases institutional life itself has aggravated their emotional difficulties. They are no more unstable than other neurotics or psychotics; in fact they are often found to belong to these categories of mentally disturbed persons and should equally receive appropriate treatment.

More accurate psychiatric diagnosis and more effective rehabilitation of those already certified would create vacancies for the truly mentally defective for whom institutional care is urgently needed and for whom it is designed.

REFERENCES

Bowlby, J. (1951) Maternal Care and Mental Health. W.H.O. monograph no. 2.
Burt, C. (1937) The Backward Child. London.
Crawford, J. M. (1953) *Ment. Hlth* **13**, 9.
Jastak, J. (1949) *J. abn. Psychol.* **44**, 367.
Kanner, L. (1948a) *Nervous Child*, **7**, 365.
— (1948b) Child Psychiatry. Springfield, Ill.
Schonell, F. J. (1948) Backwardness in the Basic Subjects. Edinburgh.

Reconstruction

MEDICAL ADVISORY MACHINERY AT REGIONAL LEVEL

T. LLOYD HUGHES
M.D. Lpool, D.P.H., Barrister-at-Law
SENIOR ADMINISTRATIVE MEDICAL OFFICER, LIVERPOOL REGIONAL HOSPITAL BOARD

THE provision of medical guidance to regional hospital boards is not subject to any statutory requirement, and no special memorandum on this matter has been issued by the Ministry of Health. It is not surprising, therefore, that the practice differs between different regions. It has been suggested that provision be made for some formal machinery, with representation from various branches of the profession and hospital staff, to advise regional hospital boards.

Centrally, the Ministry of Health is advised by the Central Health Services Council and its standing advisory committees. The Council is constituted statutorily under section 2 of the National Health Service Act, 1946. The Council's duty under section 2 (1) of the Act is defined as follows:

> "to advise the Minister upon such general matters relating to the services provided under this Act or any services provided by local health authorities in their capacity as such authorities, as the Council think fit and upon any questions referred to them by him relating to those services."

The Council not only considers specific requests for advice from the Minister, but also reviews the general development of the health service and studies any matters to which, in its opinion, the Minister's attention should be drawn. The Council is required by the Act only to advise on "general" matters; and it considers that this limits its deliberations to matters of broad general policy, and removes all questions of detailed administration from its terms of reference.

Provision is also made in section 2 (3), for the establishment of certain standing advisory committees, to advise the Minister and the Central Health Services Council. Advice from the Council and the standing advisory committees has been found to be essential in the planning and general development of the National Health Service. Professional advice, not only from medical staff but also from other staff working in the hospital service, is obtained by the Minister, who is thus assured of representative medical opinion on general medical policy.

At hospital-management-committee level, advisory boards and committees, either for individual large hospitals or for groups of hospitals, were established at quite an early date by most management committees. More recently the Ministry has issued advice on the structure and function of these advisory committees, and on the matters which may conveniently and usefully be discussed by them.[1]

NEED FOR ADVICE AT REGIONAL LEVEL

At the intermediate regional level there is no comparable provision, except in the statement that boards will want to appoint technical advisory committees to assist them on medical, nursing, and other questions.[2] If advisory machinery is essential centrally, and if guidance is required at management-committee level, it is equally necessary at regional level. The task of the regional board is to review and organise to the best advantage all existing hospital and specialist services; to assess the need for, and the best placement of, new resources, improvements, and extensions; and generally to secure, through a system of hospital management committees, and by arrangements (where necessary) with other boards and with the separate teaching hospitals, that a sufficient service is available in their area.

These duties entail assessment of the requirements of the population of the region (having regard to its distribution and its particular characteristics); arrangements to redistribute existing resources; and plans to provide for new services. Most regional hospital boards soon realised that expert and varied medical guidance was needed on such essential matters, and various methods were adopted by different regions to secure this. In some regions consultant advisers in the individual specialties were appointed on the lines of consultant advisers in the E.M.S.; in others, advisory panels were established.

MACHINERY IN THE LIVERPOOL REGION

The experience and the arrangements in the Liverpool region may be of general interest. There was early recognition of the need for the best possible specialist advice, and after considering reports from the medical members of the board sitting as a subcommittee a medical advisory council was set up. The council initially consisted of 20 members, but this number was later increased to 23. The present Constitution is as follows:

Liverpool University	3 nominations
Board of governors of the United Liverpool Hospitals	3 "
Liverpool and North Wales branch of the Regional Hospitals Consultants' and Specialists' Association	3 "
Liverpool region Consultants' and Specialists' Committee of the B.M.A.	3 "
General-practitioner member, nominated by the Merseyside branch of the B.M.A.	1 nomination
Public-health member, nominated by the north western branch of the Society of Medical Officers of Health	1 "
Medical members of the Liverpool Regional Hospital Board (physician, obstetrician, psychiatrist, pathologist, medical officer of health, 2 general practitioners, dentist)	8 nominations
Coöpted member	1 nomination

There is representation, therefore, from all branches of the National Health Service; and although the various nominating bodies are free to put forward such names as they wish, the board is frequently consulted prior to nomination. A balanced representation of all specialties, and of the various areas in the region, can thus be achieved. It will be seen that the university and teaching hospitals are afforded 6 places on the council. In this way the regional board is assured of the guidance and advice of representatives of the medical school, and close liaison is maintained between the teaching hospitals and the medical planning policy of the region. Because of this, and in view of the compactness of the region, the substantial measure of common consultant staffing between teaching and regional hospitals, and the fact that the chairman of the regional board is also chairman of the board of governors, the closest possible integration of teaching and regional hospitals is secured.

The chairman of the council is appointed by the board, and Sir Henry Cohen has served in this capacity since his appointment as the first chairman in May, 1948.

The members of the council retire every three years, but are eligible for re-election. The council held its first meeting in June, 1948, and it meets once a month during the week preceding the meeting of the board's planning committee. In this way reports and recommendations are transmitted to the planning committee for early consideration and for eventual submission to the regional hospital board, which itself meets monthly. The council's duty, based on the duty entrusted to the Central Health Services Council by section 2 (1) of the Act, is to advise the regional hospital board on questions referred to it by the board; and also to submit reports and recommendations on such medical matters of hospital policy and planning as it considers advisable.

This committee was specifically called "the council," since this clarified the position of the technical advisory committees which it was empowered to establish in

1. R.H.B.(53)91.
2. R.H.B.(47)1, para. 9.

appropriate specialties. These committees were to be regarded, not as subcommittees, but as advisory committees in their own right, and although normally the technical advisory committees report through the medical advisory council, the full advice of the advisory committee is made known to the planning committee of the board together, with the observations thereon of the medical advisory council. Technical advisory committees have been established in anæsthetics, cancer, dentistry, geriatrics, mental health, obstetrics and gynæcology, orthopædics, pædiatrics, pathology, radiology, and tuberculosis. Reports and recommendations come from the medical advisory council itself; but the technical advisory committees, on their own initiative, also submit many reports.

The constitution of the technical advisory committees is laid down formally; and nominations are received from the bodies nominating to the council, and from other sources, depending upon the specialty in question. The members of the technical advisory committees retire every three years, but are eligible for re-election.

In addition to the technical advisory committees, the medical advisory council has, from time to time, appointed ad-hoc committees to consider particular problems. For example, special subcommittees have been appointed to review the cardiological and otorhinolaryngological services in the region; and a special committee has been appointed to consider possible economies in drugs and dressings. On most of these ad-hoc committees members who are not members of the council are coöpted. Not only on the council but also on the advisory committees aspects of the health service other than hospitals are represented—e.g., by medical officers of health and general practitioners. In only two specialties has the board considered it desirable to appoint regional advisers. In the first of these—venereology—it was desirable, in such a compact region as Liverpool, to have one man to supervise and integrate the work generally; in the second—thoracic surgery—Mr. Morriston Davies has acted as consultant adviser because of the specially valuable advice that he can give.

In other specialties where it is considered that visits to hospitals by consultant advisers is necessary, the council, rather than depute one person to serve alone as consultant adviser, has appointed a small commission. In general surgery, for example, a commission of three has made a detailed survey of many of the acute general hospitals; the members of this commission consists of the professor of surgery and one other senior consultant surgeon from the Liverpool region, and a senior consultant surgeon from the Manchester region. All the reports of this commission are submitted in the first place to the medical advisory council.

The foregoing machinery for regional medical advice, based on the pattern of the Central Health Services Council, with nominations from interested bodies, has worked admirably. It brings all aspects of hospital activity to the notice of the regional hospital board and enables the board to be advised in such a way that it can carry out its planning and supervisory duties as effectively as possible.

An annual report on the work of the council is embodied in the formal annual report of the board itself. A review of these printed reports shows the comprehensiveness of the advice which the medical advisory council and the technical advisory committees have submitted to the board.

Matters on which the medical advisory council has submitted reports to the board on its own initiative (apart from surveys of various specialties such as mental health, geriatrics, and tuberculosis and proposals for their future development), include the use of regional statistics in hospital planning; the identification of patients undergoing operations; bed-occupancy turnover and the appropriate utilisation of hospital beds; blood sampling by laboratory technicians; control of cross-infections and outbreaks of gastro-intestinal infections in hospitals; and an operational plan for major civilian disasters.

SUMMARY

Medical guidance and advice are needed at regional level.

In the Liverpool region these are provided successfully by a medical advisory council and technical advisory committees.

I gratefully acknowledge the help and inspiration of Sir Henry Cohen in establishing this machinery.

The Widdicombe File

XVII. PROBLEM FAMILY AND PROBLEM PROFESSION

Dr. W. Brewer,
The Chestnuts,
Uptown.

DEAR SIR,

Mrs. R. Smith (age 38), No. 13, Downtown.

I have to acknowledge receipt of your communication dated 1st May, 1954, re the above-named woman, and confirm that the case has received the attention of the Department. Your recommendation for the temporary accommodation of the dependent relatives will receive consideration by my Council in due course upon receipt of the appropriate forms completed in triplicate by the applicant. Certain additional matters in the same communication have been dealt with under separate cover.

Yours faithfully,

T. COBBLEIGH,
Medical Officer of Health.

* * *

MY DEAR BREWER,

You don't need me to tell you what to do with the enclosed official letter. The administrative machine pushes that sort of gibberish under my nose t.d.s., and if I do not sign the damned things it forges my signature with a rubber stamp. I have no idea what the letter means, but I do know quite a lot about the Smith family. Our Rita used to come to the Minor Ailments Clinic when I was doing the school medical job. Many and many a louse I've picked off her head and brought round to the front so that she could see with her own eyes what a nest of robins she kept in her crowning glory. They were still there when she draped her peroxide waves over the pillow of our antenatal clinic couch and patted back her little kiss-curl with the flick of a ringless hand and the same old silly giggle. Perhaps you never knew it, but Bill Smith was chosen as the unlucky "it" after a game of eeny, meeny, miny, mo amongst her boy friends; so we concentrated the resources of our Welfare Department to try to get them married in time. After all, Bill was bringing in better money than most of the other Casanovas, and the principle was so well established in all levels of society that even a dim-witted Rita had one eye on the main chance, and we saw a faint hope of relieving the burden on the rates. Perhaps Rita's undoing was that her predicament came to the notice of those earnest ladies who devoted so much pious thought to the redemption of wayward gels. Rita was neither pious nor penitent about the luck of the draw; she wasn't going to scrub floors in a hostel for fallen women and then let her baby be adopted. Not Rita! Her finer feelings were thoroughly aroused and she went flat out for Bill Smith. The poor fellow looked as bewildered then as he does now, but the Office put the wind up him by talking about Bastardy Orders and paternity tests, so he put on his blue suit and the bonds of holy matrimony.

They were never off the doorstep of my office after that. Living with in-laws produced a spate of doctors' certificates for rehousing to say that Rita was anæmic. Rita was expecting another, Bill had a query slipped disc that needed a larger bed but the room was too small,

old Mrs. Smith had arthritic knees, old Mr. Smith was developing a psychoneurosis owing to his cottage being turned into a madhouse with that Rita woman and her squalling brats. The Housing Committee gloated over the certificates with morbid eagerness, and the same earnest moral welfare ladies whispered around the table. The earthly-punishment-for-deadly-sin enthusiasts seemed to be winning the day, and Rita's hopes of a council house looked pretty gloomy, when it suddenly dawned upon the chairman of the Highways Committee that Smith was the man who worked the compressor for the pneumatic drill, and that there was some talk of Bill going over to work for the neighbouring Council. A few blunt words scattered the wavering ranks of old women of both sexes, and the Smiths were allocated their council house without any further nonsense.

Some of the rest of their story you already know. The Housing Manager wants to throw them out because of the way in which they neglect and damage the house. The Committee still have their knife into Rita and give it an occasional twist by demanding that the Council serve notice to quit. The Finance Committee reply that it will cost over £30 per week to keep the five children in the residential nursery. Bill Smith is tied to his job by tighter bonds than any feudal service tenancy, and the family are fair game for snipers and snoopers. The Housing Department watch them like hawks, while hostess Rita entertains the Health Visitors, the Midwives, the School Attendance Officer, the Sanitary Inspector, the Social Visitor from the Guild of Service, the Parson, the Cruelty Man, and one or two other busybodies about whose right of entry Rita is still a little confused. Sometimes I wonder if our problem families' problem is not a surfeit of visits.

I've been yet another one to tramp more mud all over their house and poke my nose into the endemic frowstiness of No. 13; but I came out every time with much the same feeling of frustration and nearly as many fleas as you experienced. I suppose that Rita is a bit better than her mother was, and the kids are certainly better than she is. Education and opportunity are gradually producing some evolutionary improvement over successive generations, but I fear that the pattern of our society will never be that of uniform excellence, so we must face up to the continued presence of those who live downtown on the wrong side of the tracks. I'll do what I can to get the children away for the summer holidays, but they will cost the rates over £6 a nob per week, and even now I can almost hear the Councillors grumbling that they can't afford that amount for their own kids, let alone having to fork it out for a lot of little bastards and ne'er-do-wells. The people who pay the piper have a rather less high-minded way of looking at these social problems. I am sure they would die of shock if they knew how much public money has really been spent on Rita and her family, and the Smiths are only one of many such families in this town.

* * *

Can I leave the Smiths now and try to make amends for being so long in replying to your letter? You would not have got an answer even now if my wife had not happened to be introduced to your better half at some hen party last week and gathered that you were rather peeved with me. I knew nothing about your letter until then, but the office staff started a hunt for it next morning. One of the lesser minions remembered sending you a printed postcard to say that your letter of May 1 had been delivered and was receiving attention; but the ensuing three months' silence must have cooled your ardour for a personal introduction, just as the heels of many another honest citizen have been cooled on the doorstep of the Council Offices. I feel horribly guilty about the whole affair, and hope that you will forgive me when you know how the unintentional discourtesy arose.

You see, there are three trays on my desk, marked respectively IN, OUT, and L.B.W. I groan with bitter anguish at the height of the IN every morning, and my secretary does the same with the OUT at half-past four every afternoon; but the pending tray is a delight for mutual escapism. Its L.B.W. label has something to do with let the so-and-so wait, as we have found that 90% of our awkward problems resolve themselves before the next spring-clean. It was only the Crichel Down fuss that made us have a cautionary extra glance, and to our horror we found your rather dusty letter again. It should never have got there in the first place, because we have a special rule in the office that letters from doctors, councillors, Members of Parliament, and local firebrands must continue to appear in the IN tray until inspiration comes from Heaven for a reasonably early reply. I hope you will forgive me, just as you forgive the consultants nowadays for forgetting to let you know that your patients have died in hospital; and, if there is any chance that two blacks might look a bit whiter to each other, be a good fellow and let me have those last four T.B. notifications you owe us. The Registrar-General is plaguing my life about them.

Do slip in and have a chat when you are passing along the High Street, and don't be fobbed off by the human barriers and inquiry hatches. We have to maintain a sort of Maginot Line against the hordes of housing applicants claiming priority with the medical certificates some of you G.P.s seem to prescribe as placebos. Just walk along the passage marked NO ENTRY and come in the door where it says STRICTLY PRIVATE. We serve tea at 10.30 and 4 o'clock, but it's pretty foul stuff. If you do not find me in, we will probably meet at the clinical meeting in the hospital on the 16th, or at the medical dinner in the George and Dragon on the 26th. I always try to go to those shows because I think that they are the main hope of closing the ranks in the profession. It's no good going on as we are now, with the consultants in one camp, the general practitioners in another, and the public-health service in a third—each with a mob of jealous lay committee supporters. Your remark that public-health doctors are to be spoken to only in emergency or in protest is pathognomonic; I've heard the same between G.P.s and consultants. It's a time-honoured trick to play off one faction against another, divide and conquer, and I have often heard the astute committee men chuckling over their cups of tea, or their mugs of beer, at the simple doctors letting themselves become the tools of the Hospital Management Committees, the Executive Councils, and the Local Authorities. It never used to be like that in the old days before political cunning divided our loyalties and sapped our strength. Then we used to hear the laity say how hard it was to move the doctors because of the way they stuck together. If we will remember that we are one profession we can save ourselves, and perhaps mankind; otherwise we are all heading back for the Dark Ages.

God forbid that any of us should set up medico-politics as a golden calf to worship, but if we're to retain the last fragments of our freedom to practise medicine as a noble profession we shall have to fight the cancer of increasing lay control. Platitudes and lip-service at the centre will not work the miracle; it will have to be done right at the periphery, so that the consultants, the general practitioners, and the public-health doctors get together to talk at clinical meetings, to eat and drink and play golf together, to telephone instead of writing starchy letters. I shall call you Bill, not Dr. Brewer or Dear Sir, you will know all about the Welfare State without a sheaf of public-relations pamphlets; and we will solve the problems of the Rita Smiths of this world over the postprandial glass of port.

Yours sincerely,

TOM COBBLEIGH.

International Conferences

POLIOMYELITIS

ROME: SEPT. 6–10

FROM A CORRESPONDENT

MORE than 1000 delegates from 49 nations attended the 3rd International Poliomyelitis Conference, which was held in the orthopædic clinic of the University of Rome. The sponsoring organisations were the University of Rome and the Italian government on the one hand and the National Foundation for Infantile Paralysis on the other. The foundation has this year promoted, in the United States, a large-scale field trial of vaccine prepared from formolised tissue-culture fluids. Undoubtedly the discussion on vaccination was the highlight of the proceedings, when the two chief supporters of different approaches to the problem successively addressed the conference.

A day each was set aside for papers and discussions on Acute Medical Care, Infection and Immunity, Orthopædics, and Physiotherapy. It was in fact three conferences in one, with physicians, surgeons, and virologists meeting on different terms on succeeding days. Much of the material presented had already been published, and with so much to be done in a few days each speaker could only have a short time for his say; so the discussion on new communications of interest was necessarily restricted. This was particularly noticeable in the section on the application of tissue-culture methods, where twelve papers, with questions and discussion, had to be compressed into two hours.

Emphasising that problems of poliomyelitis are not purely medical ones, the conference opened with a discussion on its social aspects. Prof. S. CRAMAROSSA (Rome) and Dr. S. M. CLEMMESEN (Copenhagen) pointed to the need to give more attention to social and psychological problems raised by the disease. Dr. C. S. KEEFER (Washington) argued that the presentation of full information to the public paid dividends in morale and in coöperation in research schemes; for example, the National Foundation for Infantile Paralysis could do this work and collect funds for research projects at the same time.

Dealing with the Acute Stage

Dr. A. J. RHODES (Toronto) discussed the differential diagnosis in the acute phase. He proposed diagnostic criteria, on clinical and laboratory evidence, for the clinical types of abortive, non-paralytic, spinal, and bulbar poliomyelitis. Lumbar puncture should be performed in all suspected cases. Dr. Rhodes observed that tissue-culture technique had progressed to the stage where all hospital and public-health laboratories could offer isolation of the virus as an additional service. Isolation and typing of the virus could often be completed within three days of the receipt of a specimen. Cases of virus meningitis not due to the poliomyelitis virus could be distinguished by appropriate laboratory tests, but in 25% of such cases no ætiological agent could yet be found.

Dr. W. RITCHIE RUSSELL (Oxford) suggested that up to 80% of cases could be treated at home provided that mobile emergency units were available in a crisis. He suggested the formation of respirator units, in which the key person was the anæsthetist, working from a central depot and serving a group of hospitals. The greatest danger to life came from combined paralysis of deglutition and respiration, for which the Danish method, or a modification of it, was the best treatment. Dr. Ritchie Russell said he would like to see experimental assessment of the efficacy of different methods of treatment.

Dr. J. L. WHITTENBERGER (Boston) discussing the physiology of respiration, placed the respirators currently used in the United States in the following order of efficiency: tank; cuirass; rocking-bed. Dr. H. L. HODES (New York) stressed that respirators should be used before the onset of distress in the patient. For general purposes he recommended the tank type, but that was contra-indicated if there was pulmonary œdema or difficulty in swallowing were present. Prof. H. C. A. LASSEN (Copenhagen) and Dr. C. G. ENGSTRÖM (Stockholm) used positive-pressure ventilation through cuffed endotracheal tubes in a high tracheotomy opening in preference to tank or cuirass respirators. Dr. J. BOSCH MARIN (Madrid) described how he had adapted the orthodox tank respirator for operation by water-supply in rural areas without electricity.

Prophylaxis

In the session on the use of gamma-globulin and vaccination, Dr. H. MUENCH (Boston) analysed the data from the 1952–53 field trials of gamma-globulin in the United States. Several separate trials gave small evidence of protection, but, taken in conjunction, they amounted to a protection-rate of about 50%. Dr. W. MCD. HAMMON (Pittsburgh) showed that gamma-globulin given before exposure to virus did not prevent excretion of virus in the fæces or interfere with antibody production in more than about 3% of individuals.

Describing the use of killed virus for vaccination, Dr. J. E. SALK (Pittsburg) said that high-titre virus fluid from tissue-cultures was rendered safe for human inoculation after treatment with formaldehyde. High levels of antibody were obtained in human subjects after 2 or 3 injections; when the injections were sufficiently spaced to give a "booster" effect with the last dose, titres of 1 in 8000 and more had been obtained. Laboratory tests for antigenicity in mice and monkeys had been performed on the eighteen batches of vaccine used for this year's field trial. No alarming or untoward effects have resulted from the administration of this vaccine to about half a million children.

Dr. A. B. SABIN (Cincinatti) described modified strains in genetically pure clones of virus of all three serological types. His elegant dissection of the problem of virulence in poliomyelitis viruses has enabled him to show that these strains were non-pathogenic for chimpanzees though, at the same time, they were capable of giving rise to antibody after feeding. Strains of low pathogenicity have also been isolated from the fæces of healthy children. Dr. Sabin believed that careful progress step by step towards the use of naturally occurring or artificially produced avirulent viruses would be made in the next few years.

Virus and Cell

Dr. DAVID BODIAN (Baltimore) referred to the occurrence of viræmia in the early or preparalytic phase of poliomyelitis in man and experimental animals. Strains varied in their capacity to invade the blood-stream—a factor which could be well correlated with their virulence. He produced evidence to show that an early site of virus multiplication after ingestion of virus was the mesenteric lymph-nodes, from which virus might easily pass to the blood-stream. Dr. S. GARD (Stockholm) had found that the curve of virus inactivation by formaldehyde was exponential and not linear, as described by Salk. Tests in guinea-pigs had shown wide variations in the antigenicity of strains.

Dr. J. F. ENDERS (Boston) discussed the history and application of tissue-culture methods, in the development of which he has played such a large part.

Dr. R. DULBECCO (Pasadena) described plaque formation in tissue-cultures in which virus had grown. Strains differed in the types of plaque shown, and mutants with individual plaques and other characteristics had been segregated. The typing of strains from Scandinavia was reported by Dr. T. WESSLEN (Stockholm) and Dr. HERDIS VON MAGNUS (Copenhagen); more than 99% of strains in Scandinavia were type 1. Dr. V. MONACI (Milan) described the isolation of all three types in Italy. Dr. A. P. GOFFE (London) spoke of the quantitative relationship between virus and anti-serum, which varied in cultures of different types. Dr. J. T. SYVERTON (Minnesota) had used a stable strain of human epithelial cells from an epidermoid carcinoma of the cervix for many types of laboratory studies of poliomyelitis. Dr. G. C. BROWN (Ann Arbor), by using specific metabolic inhibitors and amino-acid analogues, had been able to find certain growth factors essential for the formation of poliomyelitis virus in tissue culture.

Dr. W. KLÖNE (Hamburg) showed a series of beautiful phase-contrast photomicrographs of tissue-culture cells undergoing cytopathogenic degeneration; he believed that the process differed with the different types of virus. Purified preparations of virus were demonstrated under the electron microscope and televised to the main auditorium by Dr. R. WILLIAMS (California). Virus particles were spherical with a mean diameter of 28 mμ.

The Prospects

Dr. J. H. S. GEAR (Johannesburg) and Dr. A. M. M. PAYNE (W.H.O., Geneva) both referred to the fact that the danger of poliomyelitis to civilised populations increased with better hygiene and sanitary provisions. It was to deal with this danger that such conferences were called.

Dr. J. R. PAUL (New Haven), summarising the conference, said that the outlook for the future without vaccine would have been increasingly bleak; but now it was hopeful. There was evidence that the present vaccine was safe and antigenic, and better vaccines might follow. If the presence of antibody protected an individual against poliomyelitis, then control was in sight.

CLINICAL PATHOLOGY AND GEOGRAPHICAL PATHOLOGY

WASHINGTON: SEPT. 5–11

FROM CORRESPONDENTS

THREE conferences in one were held in Washington earlier this month, when the 3rd International Congress of Clinical Pathology, the 5th International Congress of Geographical Pathology, and the International Meeting of the Association of Medical Museums gathered under the chairmanship of Dr. ROBERT A. MOORE (Pittsburg). The scientific sessions were well-proportioned and the selection of papers was sufficiently varied to interest all tastes, though there were relatively few papers on hæmatology because the International Society of Hæmatology was meeting in Paris during the same week. A joint session of the three organisations enabled particular emphasis to be laid on the geographical and racial differences in disease and on the pathology of the diseases of undernutrition, which tend to be neglected in countries where the standard of living is comparatively high. Moreover, pathologists from the more highly organised parts of the world were shown something of the isolation in which many of their colleagues from India, Africa, and elsewhere work.

There were 24 scientific sessions, and some of the papers are summarised below.

Incidence of Malignant Disease

H. F. DORN (Washington) described a two-year survey conducted by the National Institute of Cancer in 10 metropolitan areas of the United States with a total population of nearly 15 million. The study was confined to 46,390 newly diagnosed cases of cancer in residents in these areas. The incidence-rate was found to be the same for both white males and females but for the non-white population the rate for females was 16% greater than that for males. Males, it seems, started life with a slightly greater risk of developing cancer, but after puberty the incidence-rate for females increased so that by the age of 20 the incidence of cancer was approximately the same for each sex, while at 35 twice as many females as males were found to have a malignant tumour. The incidence-rate for females fell appreciably after the menopause and, by age 60 in the white population and 70 in the non-white population, morbidity for cancer was greater for men than for women and continued so for the rest of life. Most forms of cancer were commoner among males than among females, except for cancer of the genital organs and breast.

Excluding these forms of cancer, the risk of malignancy was 60% greater in males than females, but not until age 50 did the incidence of all forms of cancer among males exceed the incidence of cancer of the reproductive system among females. The incidence of cancer of the large intestine, biliary passages, and thyroid was higher in females than in males. The incidence of skin cancer was 46% greater in males than females when the exposed areas were considered separately, but for the covered parts of the skin it was the same in both sexes. Carcinoma of the bronchus and lung was found to be over four times as common in males as in females but in carcinoma of the larynx over twelve times as many males were affected as females.

Negroes were found to have a low incidence of skin cancer and a high incidence of genital cancer. The racial difference in the incidence of skin cancer was greatest for the exposed areas; in fact, the risk of skin cancer in these parts is fifteen times as great in whites as in the coloured population. Cancer of the prostate and penis is more common in the coloured population but cancer of the testis has a higher incidence in white men. Cervical cancer is twice as common among Negroes as among white women; moreover, the incidence is noted at an earlier age. The incidence of cancer of the ovary on the other hand is 50% greater among white than among coloured females. Other sites for which the incidence of cancer are greater among Negroes are salivary glands, œsophagus, stomach, and pancreas. Among the white males the risk of developing skin cancer is about four and a half times greater for a white male living in the south than it is for one in the north. Cancer of the lip is also less frequent among white persons living in the north, suggesting that ultraviolet radiation may be a cause.

Malnutrition and Cancer

J. N. P. DAVIES (Uganda) discussed the way in which nutritional deficiencies may influence the siting of cancer. Although frank vitamin deficiency was rarely seen even in the more primitive African communities, malnutrition was common, for in the dry seasons the daily caloric intake often fell below 1000, and the diet was poor in protein and fat. In East Africa only about 10% of the population was over the age of 45 and this fact must profoundly alter cancer statistics. Contrary to general opinion, underfed Africans may show a higher incidence of cancer than Europeans. The high incidence of primary liver cancer may well be connected with the disturbance of liver function in chronic malnutrition, and the consequences of a disordered liver may affect the general metabolism of the œstrogenic hormones. Gynæcomastia, testicular atrophy, and other feminising changes in the male were common, and so were carcinoma of the male breast, lymphosarcoma, and Kaposi's disease.

Geographical Distribution of Cancer

C. OBERLING (Paris) wondered to what extent experimental evidence was able to explain the geographical distribution of different forms of cancer. He believed experimentation still had an important part to play in the study of geographical pathology. It was now known, for instance, that it is not the parasite *Cysticercus fasciolaris* which is the cause of the tumour associated with the disease, but a thermolabile substance, possibly of a virus-like nature, carried by the parasite. A similar substance may operate in the causation of bilharzian cancer, for this complication of the parasitic infestation was common in Egypt (it has been reported in one hospital as comprising 43% of all cancer); but it was rare in South Africa and Morocco where bilharziasis was prevalent.

Research on amino-cancer of the liver in rats had revealed the importance of nutritional deficiencies in the formation of liver tumours. It was becoming abundantly clear that wherever hepatic cancer is endemic, subjects can be found whose diet is notoriously deficient in essential food factors. Breton, in a careful review of the experiments of Copeland and Salmon, noted that it was the absence of both choline and vitamin B_{12} which was essential, in the absence of a carcinogenetic substance, for provoking hepatic tumours in rats. It was important, however, to remember that in this form of cancer too there may be other factors. If malnutrition were the sole cause of a hepatic cancer, then it should be seen more frequently in certain countries where undernourishment was severe. Moreover, spontaneous hepatoma would be expected in rats which sometimes cannot avoid malnutrition; McCoy was unable to find such a tumour in a study of 100,000 rats. It was possible that undernutrition renders the hepatic parenchyma particularly sensitive to the action of poisonous substances; as an example of this, it had been pointed out that carbon tetrachloride is widely used without the slightest harm in the treatment of ringworm, but that its administration was associated with so many cases of severe hepatitis in Indonesia that it had to be given up.

Professor Oberling referred to the high frequency of gastric carcinoma in Denmark where it is twice as high as in the United States in the case of men and three times in the case of women: in Denmark the diet is rich in fats. In Iceland this disease amounts to 43% of all cancer in that country: this, in the opinion of Dungal, may be due to the large consumption of heated fats. Carcinoma of the stomach in Indonesia was common in the Chinese population and rare in the Javanese; both communities live largely on rice but the Chinese use pork fat in their cooking whereas the Javanese use vegetable fats.

PAUL E. STEINER (Chicago) dealt with the problem of the world distribution of cancer and the ætiological significance of racial studies. There was little doubt that the best incidence data, measuring risk to cancer, now available came from small countries having well-developed health services and a critical cancer registry. Already, however, some of the geographical differences point to environmental factors, but morphology in cancer is independent of ætiological agent, race, and geography. Dr. Steiner believed, however, that we required much more information on comparative pathology. Did the domestic dog and the cat, which share man's atmospheric pollution and overcooked food, have more lung and gastric cancer than their wild relatives, the wolf and tiger?

Comparison of Statistics

H. HAMPERL (Bonn) discussed certain fallacies which must be avoided in the comparison of various collections of cancer statistics. The definition of malignancy as applied to tumours still gave rise to difficulty. We knew some qualities to be found only in malignant tumours but not in all of them, and some qualities to be found in all malignant tumours, but not only in them. This meant that the clinical course and not the gross and histological findings decided eventually whether a type of tumour was considered malignant or not. Statistics may or may not include as malignant such tumours as carcinoids, basal-cell carcinomas, myxomas, and so on. Professor Hamperl reported that carcinoma-in-situ had been found in 3% of 500 unselected pregnant women, whereas the incidence of cancer of the cervix at this age was only 0·1%. He concluded that carcinoma-in-situ found in pregnant women could possibly be identical with the lesion we usually call carcinoma. In fact the follow-up of these cases showed that the lesion sometimes persisted without further growth and sometimes even disappeared completely.

Inherited Susceptibility to Cancer

MADGE T. MACKLIN (Columbus) said that animal experimentation and observation on human patients had shown that there was no inheritance of cancer in general but rather of cancer of specific sites, and probably at definite ages. She reported a series of 300 cases of proved breast cancer, from the University of Ohio Clinic. It was evident that the daughters and sisters of women with breast cancer ran a decidedly greater risk of having breast cancer, the incidence in the former being 4·5 and in the latter 3 times the normal. Similar studies on patients with gastric and intestinal cancer showed that there was a significantly greater amount of cancer in sons and daughters in the same organ affected in the parent. The increase of cancer in the same organ as the sibs was not so striking, for there were many instances in which one sib had rectal and the other gastric cancer. The evidence to date was that there are genetic factors for gastric cancer and for intestinal cancer in man, and that these appear to be site specific.

Antimitotic Agents

N. B. FRIEDMAN (Los Angeles) presented the results of studies of the effect of various agents on the dynamics of mitosis. The intermitotic interval appeared to have a number of phases, and antimitotic agents might prolong or completely inhibit these stages. Sometimes these agents interfered with cellular differentiation. Dr. Friedman's studies were made on the jejunum of the rat where, it was believed, mitosis occurs every thirty-six hours and is completed in about thirty minutes.

C.S.F. Changes in Cerebral Tumour

W. H. MCMENEMEY and J. N. CUMINGS (London) believed that a study of the cells and protein patterns of the cerebrospinal fluid in cases of cerebral tumour was of value in diagnosis: the cells sometimes gave the correct diagnosis straight away, especially in carcinoma of the central nervous system. Malignant cells could sometimes be found in fluids with cell-counts within the normal range. The finding of relative increased amounts of β-globulin in the fluid in cases of histologically malignant disease of the brain warranted further attention.

Histoplasmosis

C. H. BINFORD (Washington), reporting 22 cases of histoplasmosis, drew attention to the wide variations in the histological reactions and to the prominence of central necrosis. The non-caseating lesions were readily confused with those seen in sarcoidosis. *Histoplasma capsulatum* was not always seen in hæmatoxylin and eosin preparations but may be readily identified when the section is stained with periodic-acid-Schiff reagent. A recent review of 35 cases of so-called "tuberculoma," in which the diagnosis had not been confirmed by demonstrating the organisms, proved on further examination to contain *Histoplasma capsulatum* in 19 instances. Vegetative endocarditis was present in 3 of the 22 cases.

Fungus Diseases

L. ZIMMERMAN (Washington) said that several fungus diseases, once considered rare and invariably fatal, were now thought to be common subclinical infections; and they may appear as a lethal complication of other diseases which may have responded to primary treatment. Six such cases were presented. He believed that ecological disturbances, often brought about by antibiotics, cortisone, or corticotrophin, were operative in most cases of disseminated aspergillus and candida infection.

Industrial Lung Cancer

Two new series of cases of industrial lung cancer were described by GEORGIANA BONSER (Leeds). In a series dealing with this type of cancer in asbestos textile workers, one important observation was that exposed females were also susceptible. The other series concerned a similar type of cancer in iron-ore miners, the material being collected from the post-mortem records of Faulds of Carlisle. In 192 post-mortem examinations of iron-ore miners, 17 lung cancers were found—a significantly greater incidence than the 44 lung cancers occurring in 2378 post mortems in males over 20 years of age in Cumberland during the same period. This report seems to clinch the already suspected association between siderosilicosis and lung cancer. Many of these tumours in asbestos workers and in iron-ore miners were peripheral, spreading sometimes, but not always, to the hilum via the lymphatics.

Carcinoma of the Liver

J. HIGGINSON (Johannesburg) referred to the relation of liver cancer to cirrhosis, malaria, syphilis, and parasitic diseases. There was, he said, no precise meaning to "cirrhosis" so that geographical comparisons were difficult to make. It seemed clear, however, that primary liver cancer was often associated with cirrhosis, more so in males than females, and that the liver-cell type was more commonly associated with cirrhosis than the hepatic-cell type. In Africa and Asia, where primary liver carcinoma was common, the proportion of cirrhotic livers that become cancerous appeared much higher than elsewhere. In Dr. Becker's laboratory in Johannesburg it had been found that 5·2% of

Europeans with cirrhosis developed cancer, in contrast to 32% of Bantus.

C. BERMAN (Maraisburg, Transvaal) pointed out that information was badly needed on the relative frequency of primary liver cancer from a number of localities where nutritional syndromes resembling kwashiorkor were common. It would also be interesting to know the prevalence of liver cancer in places where kwashiorkor was said not to occur, despite the fact that it was common in adjoining districts. It seemed clear, however, that a poor diet alone was insufficient to induce liver cancer.

Pertussis

J. UNGAR (Greenford, Middlesex) said that there was no evidence that *Hæmophilus pertussis* existed naturally in any other than the typical virulent form, although artificially produced forms were well known in the laboratory. *H. parapertussis* had its own characteristic biological and antigenic properties.

A Laboratory Infection

W. McD. HAMMON, G. E. SATHER (Pittsburg), and WEBB HAYMAKER (Washington) described an instance of fatal laboratory infection with the virus of Russian spring-summer encephalitis. This was believed to have been the result of accidental inhalation of a dried powder of infected mouse brain. The patient, and another worker in the same room who was not apparently ill, both developed antibodies.

Breast Cancer

H. GRADY (Washington) reported the results of a questionnaire instigated by the International Society of Geographic Pathology. It was found that the death-rate from breast cancer was lowest in Japan (3·2 per 100,000) and highest in the English-speaking countries, with the exception of Ireland. The figure for Canada was 19·3, New Zealand 19·0, England and Wales 18·7, and U.S.A. 18·5. The incidence seemed to be higher in urban than in rural communities, while there seemed to be general agreement that the unmarried were more prone to the disease than the married. Several observers were impressed with the frequency with which mastopathia chronica cystica was mentioned as a likely precursor of malignancy. Colonel Grady reported considerable confusion in the replies received on the histology of cancer of the breast, and he thought that statistics were unlikely to be of value till there was more uniformity in the method of reporting sections. He recommended pathologists to adhere to the classification published by F. W. Stewart.

PERCY STOCKS (Colwyn Bay) said that not enough attention had been paid to the question of the social status of patients with breast cancer. It might be that the associations with fertility arose indirectly from some socio-economic factor which affected breast cancer frequency and fertility in opposite ways. High fertility appeared to have a protective effect provided that marriage had not been too long delayed. In England there were opposite gradients for breast and cervix cancer among the social classes, and these were still present after correction for class differences in the proportion that were infertile. Dr. Stocks drew attention to the strikingly low incidence of breast cancer in Japan and said that a good deal of research was still needed to explain this fact. It was easy to speak of a racial peculiarity, but the low incidence of this disease in Japan might well be due to some environmental factor, such as the continuance of breast-feeding for a longer period of time than in the West.

J. CLEMMESEN (Copenhagen), discussing the relation between mammary and uterine cancer, said that the frequency of carcinoma of the cervix may depend upon sexual activity, for it did not strictly follow the birth-rate, and Røjel had shown that the disease was particularly common in prostitutes. The left breast was more commonly involved than the right in carcinoma, and also in chronic mastitis, and in gynæcomastia in starving men, suggesting a difference in reactions which was influenced by hereditary factors.

A. T. H. MARSDEN (Kuala Lumpur) drew attention to the frequency of cancer of the male breast in Malaya and in certain other parts of the Orient. He recommended that all male cases of breast cancer be examined for evidence of liver disease and hyperœstrogenism. A failure by the liver to inactivate œstrogens normally could follow malnutrition or cirrhosis; but malnutrition had not been noted in association with cancer of the male breast.

Renal Diseases

C. P. STEWART (Edinburgh) discussed the renal clearance of creatinine in relation to inulin, both substances being given by steady infusion after a priming dose. He suggested that the technically easier method of estimating "glomerular filtration-rate" by means of the endogenous creatinine clearances might well be substituted for measurements of inulin clearance.

G. WALLENIUS (Uppsala) referred to the way in which dextran clearance could be used as a measure of glomerular permeability. The permeability of the glomerular membrane was found to be relatively fixed under normal conditions. In proteinuria, larger dextran molecules were to be found in the urine, indicating an increase in the dimension of the pores of the membrane.

C. L. PIRANI and his associates (Chicago) described the value of percutaneous renal biopsy in the diagnosis of certain diseases of the kidney, as first practised by Alwall. Changes were found in 10 out of 14 cases of lupus erythematosus, and information of value had been obtained in 22 cases of nephrosis. The technique was especially useful in assessing the need for lumbar sympathectomy.

Demyelinating Diseases

J. N. CUMINGS (London) described the chemical changes in the brain in 5 cases of multiple sclerosis; in these cases he had noted a loss of phospholipin and total cholesterol, but with the presence of cholesterol esters, which were normally absent. Often the abnormality was detectable in areas which were histologically normal.

DOROTHY S. RUSSELL (London) drew attention to the histological resemblance between acute hæmorrhagic leuko-encephalitis and postvaccinal and postexanthematous encephalomyelitis, there being, in effect, a gradation from the hæmorrhagic to the non-hæmorrhagic forms. There was increasing evidence, both clinical and experimental, for the theory that the changes in the brain in these conditions resulted from tissue sensitisation. Cavanagh's (1953) case of a patient who developed hypersensitivity during treatment with streptomycin and *p*-aminosalicylic acid was of a similar kind.

J. FREUND and M. M. LIPTON (New York) reported experiments in which allergic encephalomyelitis had been induced in guineapigs after a single intracutaneous injection of 0·08 ml. of an emulsion containing rabbit spinal cord in paraffin oil, together with killed tubercle bacilli: they found that excision of the site of injection as early as 3 hours afterwards decreased but did not prevent the chances of encephalomyelitis.

N. P. GOLDSTEIN (Bethesda) and associates reported that they had failed to verify previous reports that a non-lipid substance was capable of indueing allergic encephalomyelitis in experimental animals: they had come to the conclusion that there were at least two "antigens" present—one soluble in chloroform and the other soluble in a chloroform-methanol mixture.

Carcinoma of the Uterus

E. W. GAULT (Vellore, Madras) discussed the geographical distribution of cervical and fundal carcinoma. An analysis of 1145 biopsy-confirmed cases studied at Vellore suggested that the great frequency of cervical carcinoma was the result of early marriage and multiple pregnancies, which resulted in constantly recurring instability of the cervical epithelium. The presence of cervicitis might accentuate this instability, as also might dietary deficiency with its attendant liver disease and thiamine lack. The absence of circumcision and of penile hygiene in a large section of the community provided a possible carcinogen in smegma.

F. GAGNON (Quebec) said that no case of cancer of the cervix had been noted among 222 cancer cases in French Canadian nuns over a 25-year period, whereas carcinoma of the cervix accounted for 16% of all forms of cancer in Canadian women in general.

A. T. HERTIG (Boston, Mass.), in a review of the pathological anatomy of cancer of the uterus, drew attention to the fact that the inguinal lymph-nodes were involved in 30% of cases of carcinoma of the endometrium, as against 7% of cervical carcinoma. He believed that, if a radical hysterectomy was undertaken for endometrial carcinoma, the inguinal glands should be removed.

Chemotherapy of Tuberculosis

ROBERT KNOX (London) reported recent work on the laboratory control of chemotherapy in pulmonary tuberculosis. Microscopy had often been found to be positive when culture had failed. Direct testing of bacilli against drugs on solid media was now used in all cases with heavily film-positive sputa; indirect testing was reserved for those cases which were scantily positive or negative.

In England Now

A Running Commentary by Peripatetic Correspondents

THE PASSIONATE HÆMATOLOGIST TO HIS LOVE

Come live with me, and be my love,
And we will all the pleasures prove
That observations in the field
Of Hæmatology may yield.

There corpuscles red and white,
Will glad our microscopic sight,
And differential counts be sent
To fill our souls with ravishment.

And we shall sit beneath the trees
And calculate our M.C.V.'s,
Or wander through a leafy dell
Discoursing of the sickle-cell.

Some Apparatus shall be thine
Of M.R.C.-approved design;
If these delights thy mind can move,
Then live with me, and be my love.

THE NYMPH'S REPLY

If Hæmatology were young,
Or nought of truth in Wiener's tongue,
Thy sweet allurements might me move
To live with thee, and be thy love.

But Antibodies rule the day,
And Fisher-Race must have its say;
Thy homozygous Rh+
Would surely be too much for us.

Thy Hæmoglobin-Box so fine
Of M.R.C.-approved design
Would not avail to pay the fee
Of Incompatibility.

By reason of my cde
I fear thy mate I cannot be;
Nor all thy charms my mind can move
To live with thee, and be thy love.

* * *

As Dr. Dermod MacCarthy reminded us last week (p. 595), Henry James remembered seeing Paris from a cab at the age of little more than one, but Mr. Gladstone did even better. He recollected lying in his cot and seeing his nurse filling his bottle with milk. And when his hearers begged to doubt the veracity of his tale he replied that indeed he remembered the incident most vividly because the nurse had been told to scald out the bottle and had omitted to do so.

* * *

It is said that the great eccentric is extinct; such, for example, as Squire Charles Waterton who carried on the 18th-century tradition till he died in 1865 and during his fantastic life fulfilled an ambition to bestride an alligator. The minor eccentric is, however, still with us—young gentlemen who always wear their bright and variegated pullovers inside out or back to front as the case may be, or the lady who insists on drinking only cold water at breakfast. But my present subject is hens. I have lately met a white one indistinguishable, except perhaps to a doting eye, from her twenty-five sisters, who despises the luxurious nest-boxes in the communal ark. Each morning she waits till the door is opened, takes infinite trouble to get into the garden—believed to be hen-proof—and punctually lays her egg under a juniper bush on the rockery.

One can only speculate on why she does this. It seems to be purposeful rather than instinctive and, like all eccentric actions, is inconvenient and uncomfortable to the perpetrator. When I consider the size of her head, which so much resembles in proportions and poise that of the water-drinking lady, and when I look at a portrait of Waterton, I begin to wonder whether there is an association between eccentricity and small cranial capacity and whether psychiatry can discover a connection between perversity or negativism and the featherhead.

* * *

It was my first day ever in Italy and I knew scarcely a word of the language. I was travelling in a local train to Rome from a small country village, where I had been visiting my old friend Ugo Secalli, now living in retirement after many years as a prominent hotelier in London and Scotland. As I was leaving old Ugo, full of pride in his command of Scots ways and speech, said "just a wee deoch an' doris afore ye gang awa," and poured me a large whisky.

The train was crowded, most of the passengers were women—of all shapes and sizes. I was the only man in my compartment, and the conversation of the women was lively and excitable and amply assisted by gesticulation. I was reflecting that it would be pleasant to reach Rome and get away from this vociferous bunch, when suddenly all conversation stopped. Attention was focused on one of the women. She seemed to be in pain. It needed no expert to suspect that she was in labour. I saw the glances turn to me—my appearance, my clothes, the English and American magazines I carried, all labelled me as a foreigner, who moreover probably smelt of whisky. Clearly a man who had no business to be in the compartment at such a time. It was impossible for me to explain, and if ever a person was edged out of a railway compartment, however gently, I was.

Half-an-hour later, on the railway platform, I stood in a queue, waiting for a taxi. An American alongside was loudly expressing his annoyance that the train was late, and explaining, to all who cared to listen, that a woman had had a baby, rather precipitately, in the train. An urgent call had gone forth—in Italian, of course—for a doctor or midwife. Eventually, he said, a very young nurse had come on the scene, who was "better than nothing."

The following morning, in the University of Rome, I paused to glance at a notice pinned to the board outside the lecture-room. There was my name, followed by the announcement: Professor of Obstetrics and Gynæcology in the University of——, will give a lecture on Precipitate Labour.

* * *

I have a theory that there is a race of gremlins whose sole occupation is rewriting the newspapers after they have been thrown away. You must admit that the paper with which you light the fire, or which is wrapped round the chips, is always full of the fascinating information which wasn't there when you read it before. For example, I have just found an old copy of the Stationery Office bulletin "Government Publications." One of the publications it mentions is entitled "A Very Remarkable Flea from Argentina." It's even in the index. "Flea from Argentina, Very Remarkable." Did the Government *really* publish it, or have the gremlins put it in?

* * *

Since my wife left me for her annual visit to her mother I've been as lost as an ophthalmologist without his ophthalmoscope, as bewildered as an obstetrician faced with an empty pelvis, and as frustrated as one psychiatrist listening to another. My quasi-bachelor euphoria lasted only one day—up to the point, to be precise, where I started to read the peripatetic correspondence and found that I had no-one to whom I could explain the jokes.

The little notes that she has left help not at all. "Don't forget Mrs. Brown's bunion lotion" says one on my blotter. How do you inform a bit of paper with dignity that there is no such thing as "bunion lotion," that it is an analgesic mixture, and that even if you have forgotten you would have remembered shortly? "Get new ears for your periscope" commands one falling from my case. To what avail is it to explain to a bewildered patient that you always use old bits of rubber tubing and that you have a theory about it? Yesterday I called at the house of a patient to tell her husband how she was getting on. "Mummy's in the hospital," said her small boy who opened the door, "and me and Daddy and Willie and Joan and Donald are all alone." I knew exactly how he felt.

* * *

Overheard in outpatients

"And how" asked the casualty officer, "did the little fellow get this nasty cut?"

"Oh," replied the mother, "he fell over a pile."

"Pile of what?"

"Nothing. It was an empty pile."

Letters to the Editor

MASS MINIATURE RADIOGRAPHY

SIR,—Mass radiography has often been criticised for its lack of a clear policy. The report of a Medical Research Council subcommittee on mass miniature radiography (M.M.R.), extracts from which appeared in your issue of Sept. 11 (p. 547), is therefore welcome and timely. The report is commended to regional hospital boards by the Ministry of Health, and thus represents official policy for future use in mass radiography. It is regrettable therefore that this policy is based on the assumption "that the best method is that which yields the highest proportion of previously unrecognised cases of active pulmonary tuberculosis in a given population within a given period" (para. 1). This, in our view, is a false assumption. We believe the rôle of M.M.R. should be preventive.

At present, and certainly in the near future, not more than 6% of the population of England and Wales can be examined annually; selection is therefore necessary, and priority should be given to those groups in which an open case is most likely to cause infection of others —e.g., industrial groups, office workers, shop assistants, bus conductors, &c. Acceptance of this principle is implied in the recommendation that "it is thought more important to x-ray school teachers and other adults employed in schools (porters, etc.) on entry and periodically, than the pupils" (para. 10).

It seems logical to us to extend the use of M.M.R. to protect young people *after* they have left school. Indeed there are clinical grounds for believing that persons between 15 and 25 are more likely to develop progressive disease after a primary infection than school-children, in whom a primary infection usually runs a benign course. Recent surveys have shown that about 50% of school-leavers are non-reactors to tuberculin, and it is known that the conversion-rate rises rapidly in the first few years after they have left school. Alice Stewart has put forward evidence to show that "the pressure head of infection lies in the factories."[1] We cannot agree therefore with the view that "there is an excellent case for deflecting their [*mobile units'*] activities into more productive channels, as their use may be uneconomic and wasteful in manpower." With curious inconsistency the subcommittee commends as "admirable" the "screening" of all new applicants for appointments in particular firms at which routine M.M.R. is carried out.

We agree with the suggested grouping of units for comprehensive surveys of "black spots," but we believe that the examination by M.M.R. of symptomatic cases referred by doctors is fundamentally wrong. These are clinical problems and chest clinics should be staffed and equipped to enable them to investigate all such cases. Until this has been done the use of M.M.R. for this purpose may be justified as a useful expedient in large towns, but it is regrettable that the subcommittee should express the view that a static unit for a large enough population (250,000) "is an *ideal* ancillary to a chest clinic" (our italics).

Mass Radiography Unit 5C, St. Albans, and St. Albans Chest Clinic. T. A. W. EDWARDS A. R. BUCKLEY.

TUBERCULOSIS RATES

SIR,—I would like to support Dr. Leggat's suggestion (Sept. 11) of using the tuberculin skin-sensitivity of school entrants as an index of tuberculosis control. The Mantoux test necessitates the use of syringes and needles, adequate sterilisers, and highly trained personnel. The Heaf multiple-puncture tuberculin-testing machine is simple to use and sterilise, it requires no great skill, and the reading of the result is more clear-cut than the Mantoux test. In our experience in East Suffolk and Ipswich it has given results comparable with a 10 T.U. Mantoux test. The tuberculin-jelly test has many disadvantages and in our experience has given 30% false-positive results and an unknown number of false negatives.

I would be very sorry to see mass radiography diverted from its present use and employed to examine school-leavers or deflected into so-called "more productive channels." The unit operating in this area between 1951 and 1953 has been responsible for finding 72 (23%) of all newly notified cases of infectious pulmonary tuberculosis and 43 (17%) of all cases of non-infectious disease. These cases were spread fairly evenly throughout all adult age-groups. Had the unit been employed elsewhere, it is reasonable to assume that most of these cases would not have been diagnosed until later and would therefore have increased the risk of infecting others.

The value of a geographical register of *known* infectious disease is difficult to assess. Since 1949 there has been an increase of known infectious males from 64 to 204 and females from 29 to 115 on the register of this area —an increase in both cases of well over 300%. The reasons are the increased search for tubercle bacilli with improved bacteriological technique, and the use of antituberculous drugs. One does not know the risk of spread of infection from this pool of known cases, but, as yet, there is no indication of an increased incidence of disease in the area, particularly in children or amongst household contacts of the patients.

The tuberculin testing of school infants would probably give the most satisfactory index and if combined with repeated testing at later ages, so as to pick up the converters, it will also lead in a high proportion of cases to the source of infection.

Ipswich. CHARLES J. STEWART.

LUMBAR PUNCTURE IN POLIOMYELITIS

SIR,—I have no wish to prolong this correspondence but there are certain points in Dr. Gunn's letter of Sept. 11 which cannot be allowed to pass without comment. In the first place, he defends his proscription of lumbar puncture in suspected poliomyelitis by saying that in most cases the differential diagnosis can generally be made quite easily on clinical grounds. This statement is not accurate. No doubt the bacterial meningitides can readily be differentiated when typical, but when they present as they so often do nowadays, after treatment with a variety of chemotherapeutic agents and antibiotics, the position is very different. But apart from these I utterly fail to see how tuberculous meningitis or subarachnoid hæmorrhage can be excluded unless the cerebrospinal fluid is examined.

Dr. Gunn moreover complains that he has failed to secure the support of his colleagues for his views, and compares their scepticism to that which he states prevailed when the association between immunisation and selective paralysis in poliomyelitis was first pointed out. This comparison is not valid. Speaking for the largest local health authority in the country, I can say that as soon as the matter was brought to notice, use of the antigen most commonly incriminated was suspended and an immediate statistical investigation was set on foot, the results of which were published as soon as possible. The important point is, however, that this was a matter which lent itself readily to statistical investigation, whereas the allegation that lumbar puncture precipitates paralysis in poliomyelitis, is one that can neither be proved nor disproved. All one can do is endorse Dr. Kelleher's statement (Sept. 4) that one cannot find anything in the records of one's hospital to substantiate it.

But apart from this, there are two major principles at stake. The first is "no treatment without diagnosis." I

1. *Brit. J. Tuberc.* 1953, 47, 122.

believe it to be entirely wrong to bedevil the clinical picture by treatment with the powerful therapeutic agents at present at our command without first making every possible attempt to diagnose what one is treating beforehand, unless the situation is exceptionally urgent. "Blind therapy" is one of the greatest evils of the present time. The second is that one cannot allow it to go on record, or to appear to go on record, that in the opinion of a substantial number of those concerned, lumbar puncture in suspected poliomyelitis is bad practice. I am as little enamoured of lumbar puncture in general as Dr. Gunn. As I have reason to know, it can be a potentially lethal procedure. But in the case of a patient presenting with signs suggestive of poliomyelitis, unless a close connection with an established case is demonstrable, a lumbar puncture is, in my view, unavoidable, and it is the doctor's duty to carry it out as soon as possible.

South Middlesex Hospital, Isleworth. G. E. BREEN.

AGRANULOCYTOSIS AND ALLONAL

SIR,—Recently, a case of agranulocytosis was admitted to this hospital, and there is reason to believe that the condition was associated with the administration of 'Allonal.' Until May, 1952, this drug consisted of allylisopropylbarbituric acid and amidopyrine. Since that date, the latter constituent has been replaced by isopropylphenazone. There seems to be little doubt, however, that supplies of the original preparation still abound, and certainly analysis of the tablets taken by this patient showed that they contained amidopyrine. In view of the potential danger of the latter substance, it is suggested that if doctors prescribe allonal, they should clearly stipulate that only tablets manufactured since May, 1952, should be given to patients.

A man, aged 33, was admitted after two days of rigors, frontal headache, and vomiting. One week previously, he had sustained a small cut on the right thumb. For the previous three years, he had had symptoms of ulcerative colitis and had been in the habit of taking, on an average, from one to two allonal tablets every day during this period. For several months before admission, he had also been taking a fluid mixture containing hexamine and bismuth oxycarbonate.

On admission, he was obviously very ill and was running a high swinging pyrexia up to 104°F. There was a small fluctuant abscess over the base of the right thumb, with tender, enlarged glands in the right axilla. No other abnormal physical signs were present. A blood-count showed: Hb 85%, red cells 4,500,000, white cells 1200 per c.mm. (polymorphs 4%). A blood-culture at this stage was negative.

Systemic streptomycin (0·5 g. eight-hourly) and systemic penicillin (3,000,000 units four-hourly) were given, as well as probenicid ('Benemid') 0·5 g. six-hourly. Three days after admission, the white count had fallen to 400 per c.mm. and no polymorphs were seen. A high pyrexia persisted and the patient became very dehydrated, owing to aggravation of the colitis. An intravenous drip was set up, and by this route aureomycin and terramycin (0·5 g. six-hourly) and pyridoxine (250 mg. b.d.) were given.

Six days after admission, there were still no polymorphs in the peripheral blood, and treatment with corticotrophin (A.C.T.H.) (12·5 mg. six-hourly) was instituted. Next day, the white count was still only 400 per c.mm. but there were signs of excessive leucopoietic activity and a number of immature cells of the granular series had appeared.

After another 24 hours, the count rose to 9000 per c.mm. (polymorphs 62%) and next day it was 19,000 (polymorphs 65%). At this stage, the patient still had a continuous pyrexia of 101°F and the abscess on the thumb was still present. Thereafter, during the next few days, the pyrexia settled by lysis, the white count gradually fell to normal, and the abscess cleared up.

An iliac puncture done during the stage of recovery showed excessive bone-marrow activity affecting both the red and white cell series, but there was no evidence of any primary blood-disease, such as leukæmia. A curious feature of the marrow films was the large number of extracellular oxidase-positive granules, the significance of which remained uncertain.

Apart from allonal the only drugs that the patient had been taking immediately before admission were hexamine and bismuth oxycarbonate. Neither of these substances has been associated with agranulocytosis in the past.

Although it is not absolutely certain that allonal was responsible in this case, the circumstances make this drug highly suspect. Certainly, amidopyrine has often been incriminated in such cases.

It is interesting to note that Witts [1] reported a relapse in the red-cell count following the administration of allonal in a case of pernicious anæmia, after a good response to treatment. When this drug was withdrawn, a large reticulocytosis occurred and the red count rose rapidly to normal.

In the case I have reported, the policy was to combat any infection as far as possible with massive antibiotic treatment, until the marrow showed a spontaneous return to normal activity. Although corticotrophin was given, I think the marrow was already recovering before this drug was able to exert any real influence.

I wish to thank Dr. R. A. Hickling for permission to publish this case.

Charing Cross Hospital, London, W.C.2. M. ANTHONY PEYMAN.

METHYLPENTYNOL IN LABOUR

SIR,—Mr. Bourne's contribution of Sept. 11 is both interesting and instructive. He emphasises the cause and relief of pain by the employment of methylpentynol to eliminate fear and facilitate relaxation. He thereby recognises the basic truth of the fear-tension-pain syndrome which demonstrates a salutary change in the approach to childbirth.

My contemporaries have read, as I have, for over thirty years, reports upon "the last word" in drugs for the relief of pain in labour. The words of Joseph De Lee come back to my mind. At the foot of a contribution to this important field of research, which ended "no harmful effects were noted in the mothers or the babies," he commented: "The last ten words are getting somewhat monotonous. Why are so many drugs offered? Why do they live so briefly?"

Fifteen years ago, De Lee, with the courage that never failed him, wrote: "It is a general indictment of the medical profession that the powers of the mind are undervaluated or ignored entirely. Its vast spiritual and physical resources have hardly been touched." From nearly every country in the world I continue to receive reports of the successful relief of pain in labour by learning to utilise the power of those "vast spiritual and physical resources."

In a remote village in the Central Congo where white men rarely go and never stay, I was told by African women that childbirth was the way their gods rewarded good women. Pain in labour was caused by evil spirits in the head or a guilty conscience. "Only the mind makes pain" they said.

Every man and woman in this country desires fervently that childbirth should be a natural function without injury to the mind or body of either the mother or child. The supreme experience of a woman's life must not be allowed to cause physical or mental discomfort or distress. Must we continue to obliterate the distorted mind by using drugs rather than remove by simple means the psychological impediments for which we, as a profession, must be held largely responsible?

We all hope that Mr. Bourne has demonstrated the first entirely harmless drug which relieves the pain of labour, but practically all his cases and the controls were given relatively large doses of other drugs and 45% gas-and-air analgesia.

1. Witts, L. J. *Brit. med. J.* 1941, ii, 199.

Can we accept this as a serious contribution to the relief of pain in labour when there is a British method, internationally used, which minimises discomfort and therefore analgesia; which shortens labour; which saves time and money; which relieves the pressure on hospital beds and eases nurses' work; and which has many other advantages we need not enumerate at length?

Surely it is wiser to extend the use of this method rather than search for new drugs with which to hide our own failures.

Petersfield, Hants. GRANTLY DICK READ.

ENDOMYOCARDIAL FIBROSIS

SIR,—The paper by Dr. Ball and his colleagues in your issue of May 22, and the recent correspondence, prompt me to make the following comments.

Thrombosis is always prone to occur in dilated heart chambers. A natural sequel to the lodgment of thrombus on the endocardial surface of the heart is that the thrombus acquires a covering of endothelium and becomes, in the phraseology of the pathologist, organised. Fibrous proliferation in the African, moreover, is exuberant, a characteristic to which the frequency of cheloid bears witness. I suggest that endomyocardial fibrosis is the end-result of endocavitory thrombosis in a previously dilated heart. That the heart in its final form may not be enlarged in no way conflicts with this, for the heart being a collapsible as well as a distensible organ, neither its weight nor its volume post mortem is a measure of its size in the dynamic living state. And endocardial sclerosis may be expected to contract a previously dilated heart. Apart from this argument, however, a reasonable interpretation of figs. 1 and 4 in the paper by Dr. Ball and his colleagues is that they illustrate organised mural thrombus without discernible fibrosis of myocardium. A pertinent observation in this context is that the apical part of the left ventricular wall is thin, no less so naturally than it is in these illustrations.

It is not alone in Africa that one encounters congestive heart-failure that does not conform to established ætiological patterns. Cases of this kind are apt to be included in the comprehensive files of ischæmic (or arteriosclerotic) heart-disease (and, to rationalise the diagnosis, coronary atherosclerosis and some fibrosis of the myocardium can always be found in adult hearts in chronic congestive failure) or hypertensive heart-disease—despite the absence of hypertension. (In Africans, incidentally, as in other races, arterial pressure rises progressively with age.) But in South Africa it has, I believe, been established that a significant proportion of heart-failure is caused by malnutrition existing in varying degree over the major part of a lifetime. The heart in these circumstances is a dilated, hypodynamic one in which endocavitory thrombosis is relatively common. This form of thrombosis is a tragically frequent cause of systemic arterial embolism and a commoner cause of pulmonary embolism than peripheral venous thrombosis. If the patient survives these hazards the endocardial thrombus becomes organised, blending with the endocardium to produce a thick membrane or persisting as a polypoid fibrous excrescence. In either event, but more commonly in the latter, fibrous strands spread fanwise from the mural attachment of the thrombus into the substance of the myocardium beyond. This in minor degree is common. I have only once seen endomyocardial fibrosis of the gross degree described by Dr. Ball and his colleagues, but in that instance the basic relationship between thrombus and endomyocardial fibrosis was, I believe, recognisable.

The heart is relatively invulnerable to chronic malnutrition; other organs, notably the liver, usually fail before it does. The precise physiological relationship between the liver and the heart is fascinatingly problematical, but there is impressive evidence that the liver exercises a dominant rôle in the metabolism of the heart and that, in certain circumstances, heart-failure may be a *consequence* of hepatocellular failure. (It may be of interest that in South Africa the combination of hepatocellular failure and disease of the central nervous system, especially extrapyramidal disease, is a frequent one.)

That an individual is obese does not necessarily imply that he is not malnourished. And œdema may obscure emaciation. Malnutrition in South Africa is often attributable to a diet containing a disproportionately large amount of carbohydrate at the expense of protein and fat (a diet which may encourage fat storage and clinical obesity), and the individual's metabolism is geared accordingly. Spontaneous hypoglycæmic symptoms including coma are common. Intravenous injection of glucose causes prompt recovery from coma but, as in Mann's hepatectomised dogs, successive episodes of coma become less responsive, and eventually irreversible. In the presence of hypoglycæmia of this degree the liver, as judged by needle biopsy, is replete with glycogen, which is not mobilisable by injection of potent adrenaline, a combination of circumstances that is reminiscent of von Gierke's disease. Oral glucose, adrenaline, and insulin tolerance tests, applied to a large number of malnourished Africans, reveal bizarre but constant patterns that are (by our standards) grossly abnormal.

It is notoriously difficult to extract from an African (as I have known him) the details of what he is in the habit of eating. He will readily answer with a fanciful account of what he regards as socially acceptable fare by the white man's standards as he understands them. It will take no less than an hour of diligent questioning and patient listening to get the true story. And after that the wise investigator will check his information before accepting it as fact.

Royal Infirmary, Edinburgh. A. D. GILLANDERS.

DEATHS DURING ANÆSTHESIA

SIR,—In your annotation last week you refer to Beecher and Todd's statistical analysis [1] of some 600,000 operations—an analysis which reveals that the mortality-rate increased nearly sixfold when muscle relaxants were used. You say that you can see no evidence to justify putting blame so squarely on the muscle relaxants. I would go much further and say that the evidence they present indicts not the relaxant drugs but the technique of the majority of the anæsthetists involved.

The introduction of the muscle relaxants constituted possibly the most important advance in the history of anæsthesia. These drugs which were welcomed with open arms by British anæsthetists transformed our techniques and are now very widely used and regarded as an indispensable part of major anæsthetic procedures. In this hospital, for example, apart from those administered to outpatients, over 85% of all anæsthetics given during 1953 incorporated some specific relaxant. I maintain flatly that these drugs are extremely safe provided always that normal pulmonary ventilation is maintained. As long ago as 1946, Gray and Halton [2] pointed out the necessity for augmenting respiration when using curare. It should be unnecessary at this date to labour this point for obviously if neuromuscular blocking agents are administered in amounts which will cause partial paralysis of, for example, abdominal muscles, they will at the same time cause partial paralysis of the muscles of respiration, and pulmonary ventilation will necessarily be reduced.

Beecher and Todd's figures show that American anæsthetists use muscle relaxants much less widely than

1. Beecher, H. K., Todd, D. P. *Ann. Surg.* 1954, **140**, 1.
2. *Proc. R. Soc. Med.* 1946, **39**, 400.

we do—in less than 12% of patients undergoing general anæsthesia. They also reveal that, excluding those patients whose respiration was controlled, only 600 of 30,900 who were given these drugs had their respirations augmented. These last figures form by far the most disturbing part of their paper, indicating as they do a widespread disregard of what we consider to be the one measure most calculated to ensure the safety of our patients. The surprising thing indeed is not that the American mortality was so high when muscle relaxants were used but that it was not very much higher.

Royal Infirmary, Manchester. H. J. BRENNAN.

THE RENAL DUCTS OF BELLINI

SIR,—I should like to add some observations to this discussion, which began last year with the preliminary communication of Duran-Jorda [1] who suggested that these ducts do not open into the renal pelvis but provide for the urine to be excreted by dialysis through the papillary epithelium.

While studying mouse kidneys, I have paid special attention to the papilla because this is the starting-point of the mouse disease described by Dunn [2] as "papillo-nephritis." This papilla is a slender structure about 3 mm. long, with a diameter of about 1 mm. at the base, tapering to about 0·2 mm. at the tip. In this tip, which protrudes into the ureter, on serial sections about 4 ducts may be found opening outwards. The actual orifice of these ducts is narrow and sometimes only a virtual opening, the columnar epithelial cells of the opposite walls of the duct lying close against each other, as in the accompanying photograph. Immediately behind this valve-like orifice, however, there is an ampulla-shaped widening of the duct. This is the terminal part of the system of collecting tubules, and by some histologists is distinguished from the Bellini ducts by the name "papillary duct." Thus, Policard [3] states: "Tout à fait à l'extrémité de la papille . . . ces tubes de Bellini se réunissent pour fournir les canaux papillaires débouchants dans le bassinet, au sommet des papilles rénales." Most British and American textbooks, however, use these terms interchangeably: "the papillary ducts or ducts of Bellini."

These terminal ducts were once the subject of discussion, for some anatomists held that they provided an outward opening for all tubules found in the papilla, while Henle [4] showed that the loop-formed tubules, which now bear his name, run parallel to, but do not join, the ducts opening outwards. He demonstrated how these latter ducts are nothing but the terminal canals resulting from the dichotomous joining of collecting tubules which takes place throughout the entire length of the papilla.

To illustrate this fusion of tubules: in the mouse kidney we may count some 120 collecting tubules lined with cuboidal epithelium on a transverse section through the base of the papilla. Half-way through the papilla only about 40 ducts will be left, now lined with higher epithelium—the Bellini ducts proper. The number of these will be reduced to about 10 just above the tip of the papilla, where they continue to fuse, forming the few terminal ducts described above. In a human papilla these should number about 10 or 20, as counted from the number of pits on the area cribrosa.

In connection with the observation of Duran-Jorda, I would venture the following suggestions. These wide terminal ducts into which 2 Bellini ducts fuse at the tip of the papilla, and which themselves have a narrow opening outwards, may easily simulate hairpin bends. The valve-like orifice of these ducts, which, from the photograph of Dr. Jones and Dr. Rewell (Aug. 7), I conclude to occur also in the human papilla, might explain the findings in retrograde pyelograms cited by Duran-Jorda. Increased ureteral pressure, one may imagine, can compress these narrow openings, which are surrounded by lips of papillary tissue, and thus prevent upward flow of urine or contrast fluid.

It must be noted, however, that Henle [4] injected the tubular system of papillæ and medulla, and sometimes even of the cortex, in human, horse, and other kidney preparations by way of the ureter.

Netherlands Cancer Institute, Amsterdam. P. J. THUNG.

1. *Lancet*, 1953, i, 727.
2. *J. nat. Cancer Inst.* 1944, 5, 17.
3. Policard, A. Précis d'Histologie Physiologique. Paris, 1950; p. 543.

Papillary tip of mouse kidney (× 200).

4. Henle, J. *Abh. Ges. Wiss. Göttingen*, 1861–62, 10, 223.

MEDICAL CARE OF STUDENTS

SIR,—Dr. Logan's article of Aug. 28 contains some interesting and significant points. In particular, he stresses the wide variations in the health services of the different universities, and in his letter of Sept. 11 he draws attention to some further differences. He permits himself, however, some generalisations, in regard to the work of the services other than his own, which must, I feel, have been based on an incomplete knowledge of their aims and objects, since his remarks contain a number of inaccuracies and some assumptions which can only result in an inadequate impression of the health services of the country as a whole.

In spite of the very wide variations in the conduct of the different services, there runs through most of them a certain basic pattern. The Manchester health service probably diverges more than any of the others from this pattern and is in this sense the most unusual; sometimes one has the impression that the actual medical care of students has perhaps been given a somewhat subsidiary rôle. Clearly one of its main objects is the screening of each annual new intake for signs of remedial defects and potential illness. Dr. Logan extols the routine questionnaire as an effective and economical means of doing this, using a proforma of "4 pages including some 200 items."

Questionnaires for this and other purposes have been used in Aberdeen for more than 16 years, but have largely fallen into disuse because, as the result of sub-

sequent interviews with students who have replied to them, the answers have been found very often to be quite unreliable. I cannot bring myself to believe that by this method "significant medical information on *all* freshmen is known within two to six weeks of entry" (my italics). Without undue elaboration and addition to staff, I doubt whether it is possible, by any means, to spread a net with meshes fine enough for really effective screening of potential illness which is unknown to the individual.

With his penchant for screening, it is odd that Dr. Logan disparages the routine mass X-ray examination carried out at the beginning of the session. This, properly organised, is a simple and inexpensive screening process which causes little inconvenience either to the health-service physician or to those being examined, and it does not of course replace the further X-ray examination of suspected cases.

Though screening by questionnaire might serve to bring for early advice a certain number of cases of unsuspected illness, there would by this system be no means of checking the number which escaped. Far more useful in my view would be a good advice and treatment service which students should be encouraged to make use of at the first signs of illness. It should specialise in the occupational difficulties of students and offer through its connections the full range of medical treatment. Such a service can be achieved effectively and economically by alliance with the National Health Service.

This is the policy followed by the Aberdeen health service, where the first concern is to provide an advice and treatment service for all students who may care to make use of it. There is no obligation on the part of any student to register with the University, and students whose family doctors are available are not accepted on the list, though help is never denied them. The service aims at the highest possible standard which accommodation, equipment, and ancillary help can give, and the time factor is not allowed to interfere with the quality of work, which is limited only by the professional capacity of the physician-in-charge. The same applies to certain other universities.

This advice and treatment part of the service provides valuable data for research which is being conducted into the effects of the university environment on student health. Further data are obtained from routine health examinations of a cross section of the student population. These examinations, so much disparaged by Dr. Logan and whose significance he seems largely to have missed, are carried out not only in the first year of study but in the third and subsequent years. Each occupies about one hour, and they are not intended, as Dr. Logan implies, to serve as a screen for potential illness (though they have a value in this respect much greater than any questionnaire), but as a means of assessing health in its widest sense.

In the case of all freshmen interviewed, an inquiry is made into family history and social background, previous health, personal interests and habits, and the extent to which the student has been prepared for life at the University. A physical examination is made, including X-ray examination of chest, and a psychological assessment is attempted, though much more valuable information in regard to the latter is gained from the treatment service. Based on all factors, each student receives a health grading. Notes of the findings entered on a punch-file record card provide not only a means of correlating factors concerned with student health but constitute an excellent basic record for use in future sickness, and for comparison with the findings of similar examinations carried out on the same students after they have been for two or more years at the University, whereby its influence may be assessed.

Routine health examinations are the source of a wide range of information in regard to the undergraduate which must, surely, be of value to a university, and which, so far as I can see, cannot be obtained through other channels. With such an understanding of their purpose, I think it will be appreciated that Dr. Logan is a little confused when he attempts to compare questionnaire methods of screening with routine health examinations, which serve such a vastly wider purpose. His description of them as "a waste of the student's time and the doctor's time and skill" is I feel, to put it mildly, a little hasty.

Finally, I would ask Dr. Logan whether his description of the student body as "a very healthy population" is based on sound evidence. Has he attempted to assess the health of Manchester students other than by morbidity findings based on "paper" examinations? If not, I think he should keep an open mind on this matter.

Student Health Service,
University of Aberdeen. A. H. MACKLIN.

PENICILLIN IN THE TREATMENT OF DIPHTHERIA

SIR,—Like Dr. Librach (Aug. 21) I am more than critical of any suggestion that diphtheria should be treated by penicillin alone.

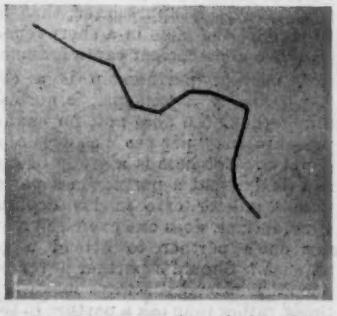
Many of us during the late war had experience of faucial, nasal, and cutaneous diphtheria, the carrier state, and mucocutaneous lesions and wounds contaminated with *Corynebacterium diphtheriæ*. In the clearing of nasal and faucial carriers we were far from impressed with the value of penicillin. Tonsillectomy appeared to be the remedy of choice where indicated.

A definite indication for antitoxin was a suspicion of nasal or faucial diphtheria. As a rule, I gave at least 24,000 units of antitoxin well diluted with saline very slowly intravenously (after routine individual sensitivity tests were carried out), together with up to as much as 96,000 units intramuscularly, the total dosage depending on the case. In addition at least one mega unit of penicillin was given in divided doses every 24 hours for 3 days.

Connaught Hospital,
Hindhead, Surrey. JOHN MACKAY-DICK.

HAIR IN THE HEEL

SIR,—A man, aged 36, complained of pain underneath the left heel for two days. There was a small dark area approximately in the middle of the heel, but no reddening for swelling. On palpation with a blunt point there was much tenderness confined to this darkened area. The presence of a thorn or other fragment was suspected, and the skin was scraped off over this dark area till a small black object presented. This was seized by mosquito forceps and a hair about $^3/_4$ in. long was pulled out, apparently going directly in at right angles to the skin surface. About an inch away, a similar piece of hair was observed passing obliquely through the skin and giving rise to no symptoms. This also was removed by gentle traction. There were no other physical signs.



The first hair is shown in the accompanying figure. After comparison with metal, human, cotton, and synthetic fibres, &c., it was decided that it was most likely to be a horse hair, which might have come out of the padding of a suit.

Although dermoid cysts from hairs have been shown to be an occupational hazard of barbers, in whom the cysts occur in the hands, usually interdigitally where the skin is soft and thin, it is believed to be rare for a hair to penetrate the skin of the heel, which is extremely thick and tough.

Slough, Bucks. ROBERT PIPER.

TREATMENT OF PLANTAR WARTS

SIR,—Dr. Foster (Sept. 4) seems to have missed the point of the article by Dr. K. D. Crow and me. We were simply concerned with assessing the merits of two most rapid and efficient methods of treatment—namely, carbon-dioxide snow combined with analgesia, and curettage and cautery under anæsthesia. Relatively unreliable, tedious, and lengthy methods such as repeated applications of podophyllin or trichloracetic acid, were not under discussion at all. In our series of 267 patients followed up for six months after treatment we obtained significantly better results with the carbon-dioxide snow technique than with curettage, whether judged from relapse-rate, or subsequent pain, tenderness, and disability.

Dr. Foster is probably unwise to consider any treatment "the absolute answer" to any disease, especially in dermatology. Perhaps freezing with the colder liquid nitrogen may be "more effective" than carbon-dioxide snow in his hands "for the odd patient," although he offers no statistical evidence. However, this is beside the point. We explained that we used carbon-dioxide snow because it is easily available at all times in all hospitals and many surgeries.

Apparently "nearly all" Dr. Foster's patients complain of severe pain after treatment with carbon-dioxide snow. This is completely at variance with our results, and, unless the Scottish child is less brave than the English, it must be accounted for by a different technique in producing analgesia.

London, W.1. O. L. S. SCOTT.

LIABILITY FOR ACTS OF DEPUTY

SIR,—The action of the medical services committee of the Devon and Exeter Executive Council, in reporting to the Minister of Health that the doctor in the case you referred to on Sept. 11 "must take greater care in his deputising arrangements," has rightly caused serious concern. It is appreciated that it may be impossible to give all the facts in a short report, but the facts that you give are sufficient cause for concern.

¶A medical partnership is a complex arrangement. A partner, as a principal, is normally regarded as fully independent (he does not, for example, have to sign his prescriptions "per pro" as does a locum tenens or other deputy). Yet here is a group of doctors recommending, as a body, that a partner in a partnership practice shall take "greater care in his deputising arrangements." How, in fact, does one exercise greater care than by asking one's partner to attend a patient during one's absence? Should a partner never be asked to deputise? Should a principal always make himself available at all times, rather than ask a partner to see a patient? I hardly like to think what effect this doctrine would have both on the partnership and the principals.

As a member of a treble partnership, if I felt I could not put complete confidence in the ability of either of my partners to look after my patients as well as I do myself, then I should be guilty of serious ethical error in asking either of them to see a patient of mine in my absence. Committees tend to make statements and take up attitudes that their constituent members, as individuals, would never make or adopt. Surely in this case they have issued a statement that is at variance with common practice, and they should be called upon to justify their attitude, and particularly their stricture on the member of the partnership.

This decision, unless challenged, will set up a de-facto rather than a de-jure judgment, and it is a threat to the profession as a whole, as well as to general practitioners, for it rides roughshod over tradition, precept, and practice.

The general high standard of medical care in the N.H.S. is surely made sufficiently obvious by the vast majority of conscientious practitioners; there is no necessity for such statements as that of the Devon and Exeter committee which add unnecessarily to the burden of responsibility already carried by those who actually do the work.

Penketh, Lancs. T. S. EIMERL.

Medicine and the Law

Phenol Poisoning in Hospital

AT an inquest on Sept. 6 [1] it was suggested that a woman of 70 had accidentally drunk phenol from a mug at her bedside while she was in hospital awaiting an operation for malignant disease. A verdict of accidental death was recorded. In evidence, it was said that a mug containing disinfectant solution and a feeding-cup of milk were both beside her bed. Later the disinfectant had gone. A nurse said that the two vessels could not easily be confused. A similar accident, which occurred a few weeks ago, was mentioned at the inquest.

Standardisation of Electrical Fittings

A boy, aged 7, who had just had his appendix removed, inhaled some vomit and later died of asphyxia. At the inquest on Sept. 3,[2] it was stated that "special apparatus" needed for treatment would not work properly on this occasion. A second apparatus was brought from another operating-theatre, but the electrical fittings were unsuitable. A third machine was fetched but this proved too weak to be effective. The coroner remarked that it was extraordinary that the plug on one apparatus would not fit the socket in the theatre. Returning a verdict of death by misadventure, the jury added: "We consider that all theatre plugs and sockets should be standardised and stricter supervision should be exercised in the maintenance of all theatre equipment."

Appointments

KERSHAW, J. B., M.B. Lond., D.P.H.: senior asst. M.O.H., Hove, and school M.O., East Sussex.
RIVLIN, S. M., M.R.C.S.: surgeon to varicose-ulcer clinic, Battersea Central Mission.

East Anglian Regional Hospital Board:

LALLOO, R. D., M.B. Brist.: medical registrar, County Hospital, Doddington.
PERRY, E. G., M.B. N.Z.: surgical registrar, East Suffolk and Ipswich Hospital.
TAYLOR, K. A., M.B. Camb.: surgical registrar, Peterborough Memorial Hospital.
WRIGHT, W. B., L.M.S.S.A.: registrar in mental deficiency and child psychiatry, Little Plumstead mental-deficiency hospital group.

South-Western Regional Hospital Board:

MACPHERSON, JOHN, M.B. Aberd., F.R.C.S.E., M.R.C.O.G.: consultant obstetrician and gynæcologist, Exeter clinical area (Torquay district).
REILLY, M. C. T., M.S. Lond., F.R.C.S.: consultant surgeon, Plymouth clinical area.
STRANGE, D. M., M.A. Oxfd, L.M.S.S.A.: senior hospital M.O., Royal Western Counties Institution, Starcross.

1. *Birmingham Post*, Sept. 7, 1954.
2. *Birmingham Gazette*, Sept. 4, 1954.

Obituary

STELLA CHURCHILL
M.R.C.S., D.P.M.

Dr. Stella Churchill, who died on Sept. 16 at Mentone, at the age of 71, came comparatively late to medicine, yet she contributed to her profession as a medical officer of health, as a psychotherapist, and as a lively writer on health education and medical psychology.

She was born in Birmingham, the youngest daughter of the late George Myers. From Edgbaston High School she went to Girton College, Cambridge, taking the natural sciences tripos in 1905. After her marriage in 1908 to Mr. S. J. A. Churchill, M.V.O., she spent some years in Italy where her husband was British consul-general in Naples. After her return to England she continued her studies at the London School of Medicine for Women. In 1917, she qualified, and after holding house-appointments at the Victoria Hospital for Children, Tite Street, and the Italian Hospital, and a clinical assistantship at Great Ormond Street, she served for a time as anæsthetist at the British Red Cross Hospital at Netley. In 1920 she began her public-health work as assistant medical officer for maternity and child welfare for Bermondsey. Two years later she was appointed deputy M.O.H. for St. Pancras. After she retired from this post in 1924 she unsuccessfully contested North Hackney and Chiswick in the Labour interest in the parliamentary elections of 1924 and 1929. As early as 1925 she was elected to the London County Council and she remained a member of the council till 1932. Meanwhile she continued her medical work at the West Hackney welfare clinic and as director of the Walworth Sunlight Clinic. She also wrote many articles and books on public-health subjects, including *Nursing in the Home* (1925), *Health Services and the Public* (1928), and *Milk* (1930). Her work in health education had directed her interest more and more to medical psychology, and in 1936 she was appointed psychotherapist to the Tavistock Clinic. When she retired from this post in 1946 she became psychotherapist at the West End Hospital. In 1949 her book on *The Adolescent and the Family* appeared.

J. M. writes: "Dr. Churchill had an exceptional number of friends. Throughout her life people met her, were delighted, and stayed on in her immense circle to enjoy her humour, wisdom, and kindliness. A gifted speaker, she could lecture or tell a story to delight everyone—except perhaps Mrs. Grundy—and some of her patients have attributed their recovery 'to laughing so much.' Naturally endowed as doctor, and particularly as psychotherapist, her social qualities were backed by her good sense and knowledge of the world, and her insight was enhanced as she aged. But beyond her social and professional interests, she had solid internal resources of contentment. Her knowledge of music, art, and poetry was great, and probably helped her to accept some invalidism without dismay. Most people nearly seventy—let alone a diabetic—would be daunted by a compound fracture of the femur. This notable woman said she had not lost by the experience, and she overcame the disability and was walking and bathing to the day of her death. Her enjoyment in life was her most endearing quality and one which will make her friendship irreplaceable to many people."

Her husband died in 1921. She leaves a son and daughter.

Diary of the Week

SEPT. 26 TO OCT. 2

Tuesday, 28th

ILFORD MEDICAL SOCIETY

9 P.M. (King George Hospital, Ilford.) Dr. Michael Ward: Ascent of Everest.

Thursday, 30th

MEDICAL SOCIETY OF LONDON, 11, Chandos Street, W.1

5 P.M. Dr. Charles Singer: How Medicine Became Anatomical. (Lloyd Roberts lecture.)

ASSOCIATION OF CLINICAL PATHOLOGISTS

2 P.M. (Grand Hotel, Brighton.) Opening of three-day Meeting.

Friday, 1st

WHIPPS CROSS HOSPITAL MEDICAL SOCIETY, Whipps Cross Hospital, E.11

8.30 P.M. Dr. Robert Forbes: Recent Developments in Medical Litigation.

Notes and News

MEN OVER SIXTY

HEAVY work, or work requiring nerve or balance, is not for the elderly. Men over sixty in heavy trades naturally turn to the less exacting jobs, relinquishing the tougher ones to the youngsters and the middle-aged. Mr. F. Le Gros Clark, in a report [1] on later working life in the building industry (the second Nuffield report on this topic), finds that both craftsmen and labourers once they are over sixty begin to show a preference for the more restrained tempo of maintenance and repair work, and take account of weather, heights, heavy lifting, speed, and other factors which previously caused them little anxiety. The report covers 315 men between the ages of 60 and 66 who were still actively at work in this industry. The numbers fell off rapidly after the mid-sixties, especially among labourers; and indeed most of those still on the job after 65 had exceptionally sound constitutions, though a few were struggling, against increasing odds, to remain at work for domestic or financial reasons. Of 97 men round about 65, however, only 6 gave any impression that they thought of retiring soon. Some 60% of the craftsmen and about half the labourers in the early sixties seemed physically strong and fit, but many of the rest complained of the hampering effects of rheumatism or bronchitis. Decline in fitness is fairly rapid, and by their mid-sixties some 30–40% of those who reached their early sixties in a fair state of working efficiency have left the industry. Taking the group of 315 as a whole, almost three-quarters were more cautious than they had been about working at heights, some 40%, indeed, preferring to keep as far as possible to jobs at ground level; nearly half were slowing down to the extent of refusing jobs with an element of speed; a fifth were unwilling to work outdoors in bad weather; and four-fifths were unwilling to travel beyond their home towns in search of work. These preferences indicate the degree of physical exertion of which these elderly men feel themselves capable; and Mr. Le Gros Clark suggests that if we wish to keep our seniors at work after they have reached retiring age we must take such preferences into account.

THE YOUNG DRINKERS

ALCOHOLISM in the family has long been recognised the world over as one of the causes of juvenile delinquency. One of the more disquieting features of the post-war increase of alcoholism in France is the incidence of alcoholic symptoms among children.[2] Dr. Serin [3] has described 4 more cases, aged three, five, seven, and twelve, with symptoms of nervousness, temper tantrums, and behaviour disturbances; 2 of the children also had terrifying hypnagogic hallucinations. All were of good family, and carefully nurtured, and none of the parents were alcoholic. The children were all in the habit of drinking undiluted wine at their meals. The father of one explained that wine was preferable to water as "water transmits poliomyelitis." The eldest child also took an occasional *apéritif*.

Disturbed by these cases, which she had met in her own practice, Serin sent a brief questionnaire to the departmental directors of the French ministry of health. The replies show that the practice of giving wine, cider, and spirits to small children is extremely widespread, and, as might be expected, it is most common in the districts producing wine and cider. In Calvados, for example, babies of eighteen months drink cider at and between meals; in Lot-et-Garonne children drink wine more or less undiluted from the age of three; and in Vendée children take bottles of wine to school with them for their lunch, and present themselves for vaccination armed with a little flask of *eau-de-vie* for encouragement. The use of spirits seems even more widespread. Pernod is commonly given to small infants as a vermifuge: in Roche-sur-Yon a child of nineteen months died of delirium tremens after forty-eight hours of this treatment. Laplane et al.[4] have described alcoholic cirrhosis in a boy, aged two, who drank half a litre of red wine daily "and beer when he was thirsty"; and Cathala [5] mentions a case of splenomegaly, due to cider-drinking, in a girl of two-and-a-half.

1. The Working Fitness of Older Men. The Nuffield Foundation, Nuffield Lodge, Regent's Park, London, N.W.1. Pp. 40. A limited number of copies are available free of charge from the Secretary of the Foundation.
2. Huber, J., Gain. *Bull. Acad. nat. Méd.* 1953, **137**, 377. See also *Lancet*, 1953, **ii**, 1030.
3. Serin. *Bull. Acad. nat. Méd*, 1954, **138**, 321.
4. Laplane, R., Duche, D. J., Dallon, Gravelcau, D., Seligmann, M. *Arch. franç. Pédiat.* 1953, **10**, 874.
5. Cathala, M. J. *Nourrisson*, 1947, **35**, 41.

This dangerous practice is usually due to ignorance, and Serin urges that an energetic campaign of health education, especially among young mothers and fathers, should be undertaken at schools, clinics, and hospitals.

FASHIONS IN CHILD CARE

TIMES change, but children remain obstinately the same—a truth brought home by the current exhibition on "The Child through the Ages" at the Wellcome Historical Museum.[1] Centuries of mothers have solved the problem of feeding, clothing, cleansing, transporting, and amusing children, and though their methods have differed the results have been much the same: the human race has survived and prospered.

For the primitive mother, the feeding of the newborn infant presents no difficulties; her chief problem is with transport, and very ingeniously she often solves it. This exhibition displays the baskets, bead bags, doeskin wallets, hoods, bark troughs, slings, cradles, and other devices in which the busy mother, off to do the morning's ploughing, stows her offspring and takes him along. Growing up—such a complex process, we are told, for civilised adolescents—has its inconveniences for primitive young people too. The initiation ceremonies which they are required to undergo are considerable feats of endurance: even girls may have several teeth avulsed. It would be interesting to know the fate of those who do not satisfy the examiners: are they referred for six months, or do they go through life as "failed matric"?

The visitor, passing in a single stride to ancient Egypt, in the next show-case, finds himself in much more enlightened company. Here are benign gods and goddesses, represented in elegant little bronze statuettes—Horus, the youthful god of healing, Hat-hor the cow-headed friend of women in child-birth, Isis nursing the infant Horus, and the jolly dwarf Bes, the god of pleasure, whose particular care it was to amuse and protect children and their nurses. Here too are amulets, bright things in vivid blue and green—a fly for swiftness, a frog for fertility, a leopard for valour, and (more humdrum but no doubt equally efficacious) a tooth to prevent toothache. From the stylised art of Egypt we leap to the naturalistic art of Greece: here are small terra cotta figures, mainly votive offerings from the temples of Æsculapius. One small master-piece stands out: a bowed peasant woman with heavy breasts, far gone in pregnancy and with two children hanging about her; she has the seamed and ancient face of a woman worn out with bearing.

Feeding bottles now appear, and hold their dangerous sway through the centuries. Those used by Greeks and Romans were made of pottery or glass, and their descendants run through the whole exhibition—in pewter, silver, stoneware, pottery, plain, ornamented, signed by famous makers (Wedgwood, Minton, Spode), decorated with the head of Queen Victoria, in cut glass or etched glass or glass embossed with the maker's name, equipped with spouts and nozzles guaranteed to defy cleaning, until they attain that perfect horror, the bottle with a long long rubber tube. A poster—shown in the exhibition—was inveighing against these death-dealing instruments as late as 1917.

Through the centuries of ignorance and error runs the history of pædiatrics, struggling towards the light. It began, perhaps, with the famous book written in the second century A.D. by Soranus; and though he had much to say that was sensible he was also responsible for some errors which persisted, on the strength of his authority, for hundreds of years. Swaddling, for instance, was still practised in the eighteenth century, and could still be faintly discerned in the "binder," which babies wore well on into the early years of the twentieth. Pædiatrics, as we know it, begins with Nicholas André's book, published in 1741, and we have to thank him, too, for giving the specialty its name. Copies of the works of both Soranus and André, and of many other pioneers, are shown here. The last cases illustrate the nineteenth century, when lives of children in this country were wasted more freely and deliberately than ever before, and when children's hospitals sprang up like champions to defend them. It is cheering to see how warmly doctors took up the children's cause, and how well they acquitted themselves.

University of Sheffield

Sir Lionel Whitby will give the opening sessional address of the faculty of medicine at 5 P.M. on Tuesday, Oct. 12. The title of his address will be A Doctor Looks Back.

1. At 28, Portman Square, London, W.1. The exhibition, which opened on Sept. 14, will run for three months.

Royal College of Surgeons of England

On Thursday, Oct. 14, Dr. Oswaldo P. Campos, president of the joint meeting of Brazilian and Latin American Orthopædic Associations 1954, will deliver the Moynihan lecture, on One Thousand Cases of Bone and Joint Tuberculosis. On Thursday, Oct. 28, Sir Gordon Gordon-Taylor, will give the Thomas Vicary lecture, on the Life and Times of Sir Charles Bell. Both lectures will be at 5 P.M. at the college, Lincoln's Inn Fields, W.C.2.

Midland Centre for Neurosurgery

On Sept. 14 Sir Geoffrey Jefferson, F.R.S., opened this centre at Holly Lane, Smethwick, which was formerly an isolation hospital. The new centre, which has cost £125,000, will serve the whole Birmingham region.

Royal Institute of Public Health and Hygiene

Dr. Frankis Evans will deliver the Bengué lecture at this institute, 28, Portland Place, London, W.1, on Thursday, Oct. 21, at 5 P.M. He is to speak on Veins and the Anæsthetist.

National Spastics Society

This society is instituting a five-year research programme at a cost of £45,000. Dr. P. E. Polani, assistant to the director of the department of child health at Guy's Hospital, has been appointed research physician.

Food Chemistry and Nutrition

Mr. Magnus Pyke, D.SC., will speak on this subject at a meeting of the nutrition panel of the food group of the Society of Chemical Industry, to be held on Wednesday, Oct. 13, at 6.30 P.M. in the rooms of the Chemical Society, Burlington House, Piccadilly, London, W.1.

National Health Service Tribunal

From July, 1951, to July, 1954, 29 cases were instituted before this tribunal, and 3 cases were carried over from the previous three-year period. In 17 of the 24 cases completed in 1951–54 the tribunal directed that the names of the practitioners, who included 2 doctors, should be removed from local lists.

National Vital Statistics

Dr. W. P. D. Logan will read a paper on this subject at a meeting of the study circle on medical statistics of the Royal Statistical Society to be held on Tuesday, Sept. 28, at 6.45 P.M., in the Westminster Medical School, London, S.W.1. Further information may be had from the hon. secretary, Mr. M. P. Curwen, St. Bartholomew's Hospital, E.C.1.

St. John Ambulance Brigade

A conference for surgeons and nursing officers of the brigade is to be held at B.M.A. House, Tavistock Square, London, W.C.1, on Saturday and Sunday, Oct. 30 and 31, under the chairmanship of Major A. C. White Knox, the surgeon-in-chief. Further information may be had from his department, 8, Grosvenor Crescent, S.W.1.

Vellore Reunion

This meeting will be held on Wednesday, Oct. 6, at the Caxton Hall, Westminster, S.W.1. Sir Philip Manson-Bahr, who has recently visited the college and hospital at Vellore, will take the chair in the afternoon at 3.30 P.M. and Dr. Edith Summerskill in the evening at 7 P.M. The speakers will include Dr. Howard Somervell and Dr. Donald Paterson.

Exhibition of Kinematography

The exhibition, which the kinematograph group of the Royal Photographic Society is holding from Dec. 3 to 18, will include a medical section. The last date for entry of films is Oct. 30, but intending exhibitors should get in touch with the hon. secretary of the group, 16, Princes Gate, London, S.W.7, as soon as possible.

CORRIGENDUM: *Collegium Internationale Allergologicum.*—We regret that the name of the president of this association was given wrongly last week (p. 606). The president is Dr. David Harley, 19, Queen Anne Street, London, W.1.

The proceedings of the first International Congress on Medical Librarianship, which was held in London in July, 1953, have now been published under the editorship of Mr. F. N. L. Poynter, librarian of the Wellcome Historical Medical Library, as an issue of *Libri, the international library review* (vol. 3, 1954, Copenhagen: Munksgaard. Pp. 451. 50 Kr.).

Especially designed for CHILDREN

TRADE **'ILOTYCIN'** MARK

Paediatric

FOR ORAL SUSPENSION

THE SAFE SELECTIVE WIDE-RANGE ANTIBIOTIC FOR CHILDREN

Particularly effective against Staphylococci, Streptococci, and Pneumococci.

Causes no alteration in normal blood picture.

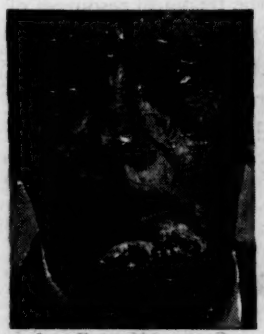
Dose ¼-teaspoonful per stone body-weight every 6 hours.

Lilly TRADE MARK

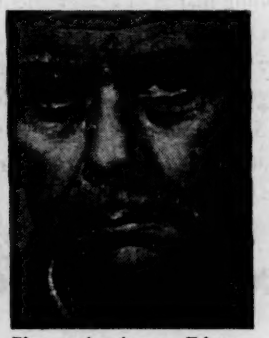
The Originator of Erythromycin

ELI LILLY & COMPANY LIMITED · BASINGSTOKE · HANTS

"F99" *in the treatment of* ECZEMA



Diagnosis: Obstinate eczema of the face. Photograph taken on October 5, 1949, before treatment with "F99".



Photograph taken on February 14, 1950. Treatment one "F99" capsule and one application of "F99" ointment daily.

"F99"—available in capsule, liquid and ointment forms—is a concentrate of the active isomers of Linoleic and Linolenic acids, of the highest achievable purity and standardized biological activity. It is indicated in skin disorders due to essential fatty acid deficiency of dietetic or "absorption" origin, i.e. chronic furunculosis, eczemas of various types, including infantile eczema, and in some cases of acne.

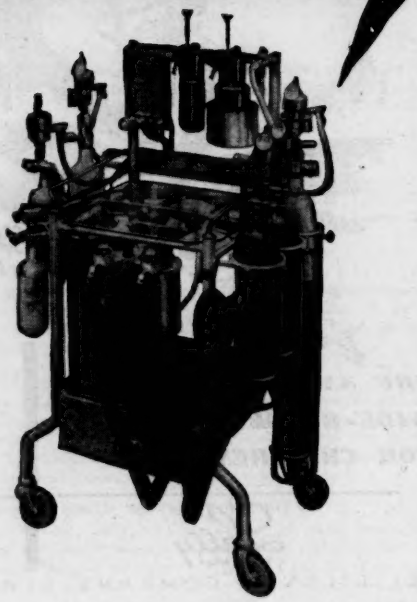
"F99" is also excellent in the healing of all wounds free from serious infection—particularly leg ulcers. Sufficient success has also been reported to warrant its use—as an unsaturated substance—in the treatment of psoriasis.

Literature on request

INTERNATIONAL LABORATORIES LTD. *Dept. LT*21, 205, HOOK ROAD, SURBITON, SURREY

From the anaesthetizing machine

to the modern Boyle apparatus



From the modest experiments of resolute men undaunted by prejudice; to the science of Anæsthesia commanding a wealth of specialised apparatus undreamed of by the early pioneers . . . . In this ever-quickening march of achievement the technical resources of The British Oxygen Company have long been at the service of Medicine. To-day this Company manufactures and distributes a comprehensive range of up-to-date apparatus for the relief of pain; and the BOC Service ensures the prompt delivery of anæsthetic apparatus and gases to any corner of Great Britain or the Commonwealth.

THE BRITISH OXYGEN CO LTD

MEDICAL DIVISION

Australia
Burma
Canada
Ceylon
East Africa
Egypt
Hong Kong
India
Malaya
New Zealand
Northern Rhodesia
Pakistan
Southern Rhodesia
South West Africa
Union of South Africa

MEDICAL BOC DIVISION

Great West Road
Brentford
Middx.

SERVICE AS UNIVERSAL AS THE NEED

R·A·M·C

New conditions and terms of service

Regular and Short Service Commissions

New and improved conditions of service in the R.A.M.C. are now offered to doctors. These include:—

★ *permanent commissions direct from civil life.*

★ *after one year's satisfactory service, grant of £1,500 (taxable) to officers appointed to a regular commission after 1st October, 1953.*

★ *antedates (which count towards pay and promotion) of up to 7 years for civilian experience, and credit for former commissioned service other than as a doctor.*

★ *3 year short service commissions for those having liability for National Service.*

★ *increases in pay for captains and above.*

★ *increased rates of specialist pay.*

For full details, application should be made to the War Office (AMD 1), Room 130, Lansdowne House, Berkeley Square, London, W.1 (Telephone: GROsvenor 8040 Ext. 548).

Oil means people

The Shell companies, in their operations across the world, pay the wages of about 250,000 people. Good wages for good work. People who make their careers with Shell seldom look over their shoulders for better prospects or better treatment in other jobs.

The Shell family is of all races, creeds and colours. Of the 250,000 on the payrolls, more than 240,000 are nationals of the countries in which they work. Oil pioneering has often done much to improve and steady the economy of a country by providing revenue for its treasury, and employment, wages and buying power for its workers.

Finding, producing or refining oil in a hitherto uninhabited region can involve the creation of whole new communities with schools, churches, hospitals, health services, roads . . . and a real sense of civic pride. These social services may add greatly to operating costs, but that is welfare.

For every man or woman who works with Shell, another 1,000 depend on Shell to make the wheels of their world go round. The products of Shell Research equip your garage (oil and petrol), your garden (insecticides and weed killers), your kitchen (detergents and kerosine) and your dressing-table (cosmetics and medicines).

Shell employ people by the tens of thousands. They serve people by the hundred millions.

people matter to SHELL

THE SHELL PETROLEUM CO. LTD., ST. HELEN'S COURT, LONDON E.C.3

When diet is important . . .

. . . . the busy practitioner can obtain immediate, practical advice and assistance free of charge from the Energen Dietary Service. Special diets for individual patients are prepared on receipt of appropriate particulars. Personal consultations with the Senior Dietitian may be arranged by telephone or letter. Standard diet cards covering numerous common ailments, and suitable for handing to patients, are supplied singly or in an indexed supply in a desk filing box. "Diet and the General Practitioner"—40-page book of monographs on specific dietary problems is also available to any practitioner. For further details and advice on all aspects of diet and nutrition apply to the Secretary,

ENERGEN DIETARY SERVICE

25a, Bryanston Square, London, W.1. AMBassador 9332

★ These services are available only in the United Kingdom.

magnesium trisilicate

Pattinson's REGD BRAND

One of the fine Magnesium Chemicals made for the Pharmaceutical Industry by

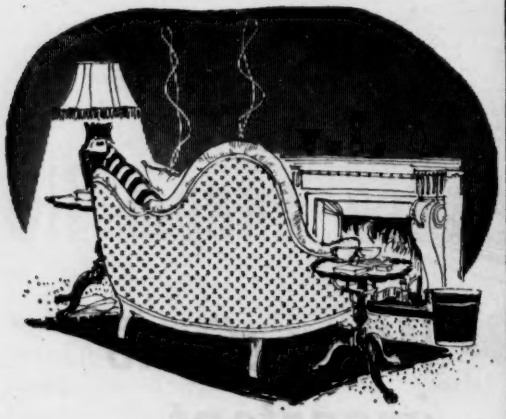
PATTINSON'S LIGHT MAGNESIUM TRISILICATE is a fine, odourless, almost tasteless white powder conforming in every respect to the specification of the British Pharmacopœia 1953.

Its value in the treatment of peptic ulcer and related disorders results from its ability to preserve the pH within a most desirable range over an extended period; at the same time, by a threefold action of coating ulcerated areas with gelatinous silica, adsorbing pepsin, and inhibiting excessive peptic activity, it protects damaged and ulcerated areas from proteolysis.

Noted for its palatability and freedom from adverse after-effects, it is non-eructating and does not induce alkalosis or acid rebound. Any tendency to constipation is reduced by its gentle laxative action.

THE WASHINGTON CHEMICAL CO. LTD.

WASHINGTON, CO. DURHAM. *A member of the* TURNER & NEWALL ORGANISATION



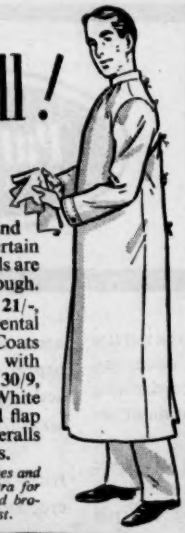
Two's Company . .
with
PLAYER'S Nº3

The Quality Cigarette

[3P 121A]

★ ★

Overalls for All!



Overalls that look smart, wear well, wash well. Yes, our extensive range ensures you get the best choice of colours, styles, and materials. You can be certain that Charles Baker's overalls are the best through and through. White Surgeons' Gowns **21/-**, Dental Jackets **27/11**, Dental Coats **35/-**, White Long Coats **25/10**, White Long Coats with fly Front and flap pockets **30/9**, White Jackets **19/6**, White Jackets with fly Front and flap pockets **22 6**, Ladies' Overalls also stocked in many styles.

POST ORDERS *please state sizes and styles required. Enclose* **1/3** *extra for postage and packing. Illustrated brochure and price list sent on request.*

Charles Baker
AND COMPANY LIMITED

137–8 Tottenham Court Road, London, W.1.
(Opposite Warren Street Tube Station)
Phone : EUSton 4721/3

There is no *varied diet problem* with Canned Strained Foods

YOU can almost read a mother's thoughts when you recommend early mixed feeding for her baby! Can I *get* the foods—and prepare them properly? Will it take much time . . . ?

Fortunately, you can tell her about the range of Heinz Strained Foods. It includes chicken and meat broths, soups, vegetables, fruits and cereal—foods often difficult to prepare at home because of time, cost or season.

And these foods actually are even more nutritious than similar foods prepared at home. This is a thing mothers often query, as you know. Foods come fresh to the Heinz factory where they are cleaned, cooked, strained, canned and sterilised immediately, by scientific methods, and inspected at every stage.

Heinz Strained Foods are a balanced team providing vital proteins, vitamins and minerals. Nutritious, hygienic, ready to use, they solve varied diet problems completely and economically.

For a FREE booklet giving the exact nutrient values of these foods, please write to Dept. 4N, H. J. Heinz Company Ltd., Harlesden, London, N.W.10.

By Appointment Purveyors of Heinz Products to the Late King George VI

57 **HEINZ Strained Foods**

17 varieties

IN FEBRILE CONDITIONS

Because LUCOZADE is so palatable it is frequently given to children and adults in febrile conditions. These patients, off their food, yet in need of the sustenance which LUCOZADE so attractively supplies, respond quickly to glucose presented in this delightful, non-nauseating form.

LUCOZADE

the sparkling glucose drink

HOSPITAL PLANNING REQUIREMENTS

By GUY ALDIS, A.R.I.B.A., A.A.Dipl.
Architect to the East Anglian Regional Hospital Board

With the minimum of text and the maximum of diagrammatic illustration, this important new book offers architects and all concerned with hospital planning a very clear guide to the requirements for departmental accommodation, and dispositions necessary for the successful running of a hospital. It will do much to ensure that the architect is not ill-equipped to reconcile the diverse views and demands of hospital staff with his own problems of structure and design.

Crown 4to. 257 pages. 85s. net.

PITMAN
Parker St., Kingsway, London, W.C.2

HEIGHAM HALL, NORWICH

PRIVATE MENTAL HOME for Nervous and Mental illness. All types of treatment carried out. Accommodation for Alcoholics and Addicts available. Special Geriatric Unit now open. Fees from 6 gns. per week upwards according to requirements.
Apply to Dr. J. A. SMALL Telephone: Norwich 20080

CHISWICK HOUSE

PINNER, MIDDLESEX
Telephone: PINNER 234

A Private Home for the Treatment and Care of Mental and Nervous Illnesses in both Sexes.

A modern house, 12 miles from Marble Arch, in attractive secluded grounds. Patients treated under Certificate, Temporary or Voluntary status. Modern forms of treatment, including psychotherapy, narco-analysis, modified insulin, occupational therapy, E.C.T., etc. Fees from 12 guineas a week.
DOUGLAS MACAULAY, M.D., D.P.M.

BOWDEN HOUSE

HARROW-ON-THE-HILL, MIDDLESEX
Established in 1911 Tel.: BYRon 1011 & 4772
(Incorporated Association not carried on for profit)

A private clinic for the treatment of the neuroses and nervous disorders by psychotherapy and all modern physical therapies.
Apply: MEDICAL DIRECTOR

SPRINGFIELD HOUSE

Phone: BEDFORD 3417 Near BEDFORD
For MENTAL CASES (including the aged)
Fees from Eight Guineas per week
For forms of admission, &c., apply to the Resident Physician, CEDRIC W. BOWER.
INTERVIEWS IN LONDON BY APPOINTMENT.

CLIFFDEN, TEIGNMOUTH

For the early treatment of nervous disorders and patients needing rest and care

A well-appointed House with spacious balconies and extensive views of the South Devon Coast. Beautiful garden and own dairy in 35 acres In the same grounds, **ROWDENS**, a comfortable house with lovely views. Private road to the beach
There is also a charming house, **EBWORTHY, MANATON, DARTMOOR**, situated in 25 acres, 1100 ft. up for bracing moorland air
Resident Physicians—BERTHA M. MULES, M.D., B.S. ANNE S. MULES, M.R.C.S., L.R.C.P. Telephones—TEIGNMOUTH 289 and 537

ST. ANDREW'S HOSPITAL FOR NERVOUS AND MENTAL DISORDERS
NORTHAMPTON

PRESIDENT: THE EARL SPENCER

MEDICAL SUPERINTENDENT: THOMAS TENNENT, M.D., F.R.C.P., D.P.H., D.P.M.

This Registered Hospital is situated in 130 acres of park and pleasure grounds. Voluntary patients, who are suffering from incipient mental disorders or who wish to prevent recurrent attacks of mental trouble; temporary patients, and certified patients of both sexes are received for treatment. Careful clinical, biochemical, bacteriological, and pathological examinations. Private rooms with special nurses, male or female, in the Hospital or in one of the numerous villas in the grounds of the various branches can be provided.

WANTAGE HOUSE

This is a Reception Hospital in detached grounds with a separate entrance, to which patients can be admitted. It is equipped with all the apparatus for the complete investigation and treatment of Mental and Nervous Disorders by the most modern methods; insulin treatment is available for suitable cases. It contains special departments for hydrotherapy by various methods, including Turkish and Russian baths, the prolonged immersion bath, Vichy Douche, Scotch Douche, Electrical baths, Plombières treatment, etc. There is an Operating Theatre, a Dental Surgery, an X-ray Room, an Ultraviolet Apparatus, and a Department for Diathermy and High-frequency treatment. It also contains Laboratories for biochemical, bacteriological, and pathological research. Psychotherapeutic treatment is employed when indicated.

MOULTON PARK

Two miles from the Main Hospital there are several branch establishments and villas situated in a park and farm of 650 acres. Milk, meat, fruit, and vegetables are supplied to the Hospital from the farm, gardens, and orchards of Moulton Park. Occupational therapy is a feature of this branch, and patients are given every facility for occupying themselves in farming, gardening, and fruit growing.

BRYN-Y-NEUADD HALL

The seaside house of St. Andrew's Hospital is beautifully situated in a park of 330 acres, at Llanfairfechan, amidst the finest scenery in North Wales. On the North-West side of the Estate a mile of sea coast forms the boundary. Patients may visit this branch for a short seaside change or for longer periods. The Hospital has its own private bathing house on the seashore. There is trout-fishing in the park.

At all the branches of the Hospital there are cricket grounds, football and hockey grounds, lawn tennis courts (grass and hard courts), croquet grounds, golf courses, and bowling greens. Ladies and gentlemen have their own gardens, and facilities are provided for handicrafts, such as carpentry, etc.

For terms and further particulars apply to the Medical Superintendent (TELEPHONE: Northampton 4354 (3 lines)), who can be seen in London by appointment.

CAMBERWELL HOUSE, 33, Peckham Road, London, S.E.5

Telegrams: "PSYCHOLIA, LONDON" — *Telephone:* RODNEY 4242 (2 lines)

A PRIVATE HOSPITAL FOR THE TREATMENT OF NERVOUS AND MENTAL DISORDERS

Completely detached Villas for mild cases. Voluntary Patients received. Fifteen acres of grounds. Hard and grass tennis courts, putting greens, Recreation Hall with Badminton Court, and all indoor amusements. Occupational therapy, Calisthenics, Actinotherapy, prolonged immersion baths, shock and all modern forms of treatment. Chapel.

Senior Physician Dr. THOMAS T. BARTLETT, assisted by a resident Medical Staff and visiting Consultants

An Illustrated Prospectus giving fees, which are reasonable, may be obtained upon application to the Secretary

MUNDESLEY SANATORIUM
MUNDESLEY, NORFOLK

TERMS FROM 16 GUINEAS WEEKLY (Single Room). Immediate vacancies
" " 14 " " (Shared Room). Waiting list: approx. 6 weeks

Medical Superintendents:

E. C. WYNNE-EDWARDS, M.B.(Cantab.), F.R.C.S.(Edin.)

GEORGE H. DAY, M.D.(Cantab.)

For all information apply THE SECRETARY

Telephone: Mundesley 94 and 95 (2 lines)

Vacancies

	Page
ACADEMIC AND EDUCATIONAL SECTION	40
ANÆSTHETICS	
Charing Cross. Reg.	42
Highlands Gen., N.21. H.O.	42
North West Met. R.H.B. Sr. H.M.O.	41
Blackburn & Dist. H.M.C. Sr. H.O.	44
Chertsey. St. Peter's. Sr. H.O.	44
Douglas. Noble's I.O.M. H.O.	45
Dudley, Stourbridge & Dist. Sr. H.O.'s	45
Ipswich. Borough Gen. Sr. H.O.	46
Leeds A Group H.M.C. Sr. H.O.	46
Leeds R.H.B. P.-t. Cons.	41
Leeds R.H.B. Reg.	46
Manchester R.H.B. Reg.	47
Manchester. Withington. Sr. H.O.	47
Newcastle R.H.B. Cons.	42
Newcastle R.H.B. Reg.	48
Nottingham Gen. Sr. H.O. or Locum Sr. H.O. & Reg.	48
South East Met. R.H.B. Reg.	50
Warrington Infy. Sr. H.O.	51
Melbourne, Australia. St. Vincent's. Director	42
CARDIOLOGY	
London, E.1. Sr. Reg.	43
CASUALTY	
Prince of Wales's Gen., N.15. Sr. H.O.	43
St. George-in-the-East, E.1. Sr. H.O.	43
Cheltenham Gen. & Eye. Sr. H.O.	44
Colchester. Essex County. Sr. H.O.'s	45
Coventry & Warwickshire. Sr. H.O.	45
Croydon. Mayday. Sr. H.O.	45
Dudley, Stourbridge & Dist. Sr. H.O.'s	45
Farnborough, Kent. Sr. H.O.	45
Grimsby Gen. Sr. H.O.	45
Leamington Spa. Warneford Gen. Sr. H.O.	47
Leeds Public Dispensary & Hosp. Sr. H.O.	46
Newcastle Gen. Sr. H.O.	48
Nottingham Gen. Sr. H.O.	48
Orpington, Kent. Sr. H.O.	49
Southend Gen. Temp. Reg.	50
CHEST AND TUBERCULOSIS	
Brompton, S.W.3. H.O.'s	42
London Chest, E.2. H.O.'s	42

Page

Denbigh. Llangwyfan. Sr. H.O. .. 45
Keswick. Blencathra San. Jr. H.M.O. 46
Leeds. Killingbeck. Sr. H.O. .. 47
Leeds R.H.B. Area. H.O. 46
Leeds R.H.B. Reg. 47
Leicester Isolation Hosp. & Chest Unit. Sr. H.O 47
Manchester R.H.B. Reg. 47
Mitcham, Surrey. Cumberland. Reg. 48
Newcastle R.H.B. Asst. Chest Phys. 42
Newcastle R.H.B. Regs. 48
Rotherham. Oakwood Hall San. & Chest Clinic. Reg. 49
Sheffield R.H.B. Sr. H.M.O. .. 42
West Fife Hosps. B.O.M. Reg. .. 51
Wokingham. Pinewood. Reg. .. 50
Yorkshire. East Riding H.M.C. Sr. H.O. 51

DENTAL SURGERY

Plymouth, South Devon & East Cornwall. H.O. 49
Scotland. Western R.H.B. Regs. .. 49
Northern Ireland Hosps. Auth. P.-t. Reg. 51

DERMATOLOGY

Hammersmith, W.12. P.-t. Reg. .. 42
Leeds R.H.B. Area. H.O. 46
Leeds R.H.B. Reg. 47

EAR, NOSE, AND THROAT

Charing Cross, W.C.2. Reg. 42
Royal National T. N. & E. H.O. .. 43
South West Met. R.H.B. P.-t. Sr. H.M.O. 41
Bournemouth & East Dorset H.M.C. H.O. 44
Canterbury. Kent & Canterbury. Sr. H.O. 44
Doncaster Royal Infy. Sr. H.O. .. 45
Exeter. Royal Devon & Exeter. Sr. H.O. 45
Farnborough, Kent. Sr. H.O. .. 45
Halifax Royal Infy. H.O. 45
Newcastle R.H.B. Reg. 48
Newport, Mon. Royal Gwent. Jr. H.M.O. or Sr. H.O. 48
Scotland. Western R.H.B. Reg. .. 49
Wigan & Leigh H.M.C. Reg. .. 51
Woking & Chertsey H.M.C. Reg. .. 50
Australia. Rockhampton, Queensland. P.-t. Specialist 42

GERIATRICS

Brechin, Angus. Stracathro. Sr. H.O. 44
Cardiff. St. David's. Sr. H.O. .. 44
Hornchurch. St. George's. Jr. H.M.O. 46
Leeds R.H.B. Area. H.O. 47
Leeds R.H.B. Cons. 41
Leeds. St. James's. Sr. H.O. .. 47
Rochford, Essex. Gen. Sr. H.O. .. 49
South East Met. R.H.B. Reg. .. 50

MEDICINE

Dulwich, S.E.22. H.O. 42
Hackney, E.9. H.O. 42
Hosp. for Sick Child., W.C.1. Sr. H.O.'s 43
Lambeth, S.E.11. Locum Sr. Reg. .. 43
Prince of Wales's Gen., N.15. Sr. H.O. 43
Queen Mary's Hosp. for the East End, E.16. H.O. 43
Westminster, S.W.1. Sr. Reg. .. 43
Ashton, Hyde & Glossop H.M.C. Sr. H.O. 43
Aylesbury. Stoke Mandeville. H.O. 43
Birmingham R.H.B. Reg. 44
Brighton. Royal Sussex County. Locum H.O. 44
Bury & Rossendale H.M.C. Sr. H.O. 44
Exeter. Royal Devon & Exeter. H.O.'s 45
Glasgow Royal Infy. Sr. H.O. .. 45
Halifax Royal Infy. H.O.'s 45
Ilford. King George. H.O. 46
Leeds R.H.B. Area. H.O.'s. 46
Leeds R.H.B. P.-t. Cons. 41
Leeds R.H.B. Reg. 47
Luton & Dunstable. H.O. 46
Maidenhead. H.O. 48
Newcastle R.H.B. Reg. 48
Northallerton. Friarage. Pre-reg. H.O. 48
Rhyl. Royal Alexandra. H.O. .. 49
Rotherham. Doncaster Gate. Reg. 49
Tredegar, Mon. St. James. H.O. .. 50
Welsh R.H.B. Reg. 51
Yorkshire. East Riding H.M.C. Sr. H.O. & H.O. 51
Australia. Rockhampton, Queensland. P.-t. Specialist 42
Michigan, U.S.A. Oakwood. Residency 51

Page

NEUROLOGY

North East Met. R.H.B. P.-t. Cons. 41
West End Hosp. for Neurology & Neurosurgery, W.10. Sr. H.O. .. 43
Leeds R.H.B. Area. H.O. 46

NEUROSURGERY

Derby. Derbyshire Royal Infy. Reg. 45

OBSTETRICS AND GYNÆCOLOGY

East End Maternity, E.1. Sr. H.O. & H.O. 42
Prince of Wales's Gen., N.15. H.O. .. 43
Ashton, Hyde & Glossop H.M.C. Sr. H.O. 43
Bedford Gen. H.O. 44
Birmingham. Sorrento Maternity. H.O. 44
Birmingham United Hosps. H.O. .. 44
Bishop's Stortford. Haymeads. H.O. 44
Cheltenham Maternity. H.O. 44
Chichester Group H.M.C. Reg. .. 45
East Fife Hosps. B.O.M. Reg. .. 45
Kingston, Surrey. Reg. 46
Leeds R.H.B. Area. H.O.'s. 46
Manchester R.H.B. Reg. 47
Manchester United Hosps. Reg. & H.O.'s 47/48
Newcastle Gen. H.O. 48
Nottingham. Firs Maternity. Sr. H.O. 48
Rochford, Essex. Gen. Pre-reg. H.O. 49

OPHTHALMOLOGY

Leeds R.H.B. Area. H.O.'s. 46
Leicester Royal Infy. Reg. .. 47
Maidstone. Kent County Ophthalmic & Aural. Sr. H.O. 48
Romford. Oldchurch. Sr. H.O. .. 49
Southampton Eye. Sr. H.O. 50

ORTHOPÆDICS

Ashford, Middx. H.O. 43
Cardiff H.M.C. Sr. H.O.'s 44
Leeds R.H.B. Area. H.O.'s. 46
Leeds R.H.B. Regs. 47
Liverpool. Broadgreen. Sr. H.O. or H.O. 47
Luton & Dunstable. Reg. 46
Manchester R.H.B. Reg. 47
Nottingham Gen. Sr. H.O. or Locum Sr. H.O. 48
Oswestry. Robert Jones & Agnes Hunt Orthopædic. Reg. 49
Plymouth. Mount Gold Orthopædic. Sr. H.O. 49
Salisbury Gen. H.O. 49
Sheffield R.H.B. Sr. Reg. 50
South East Met. R.H.B. P.-t. Cons.
Stoke-on-Trent. North Staffs Royal Infy. Sr. H.O. 42
Wigan. Royal Albert Edward Infy. Sr. H.O. 50

PÆDIATRICS

Hosp. for Sick Child., W.C.1. Reg. .. 43
Birmingham United Hosps. Sr. H.O. or Reg. 44
Leeds R.H.B. Area. H.O.'s. 46
Nottingham Child's. H.O. 48
Nottingham City. Sr. H.O. 48
Scotland. Western R.H.B. Reg. .. 49
St. Albans City. H.O. 50

PATHOLOGY

London Chest (Country Branch). Reg. 43
Royal Free, W.C.1. Sr. H.M.O. .. 41
Barnsley. Beckett. Reg. 43
Bolton & Dist. H.M.C. Sr. H.O. .. 44
Cheltenham Group H.M.C. Sr. H.O. 44
Manchester. Withington. Clinical Path. 47
Newcastle R.H.B. Regs. 48
Reading Area Hosps. Sr. H.O. or H.O. 49
South East Met. R.H.B. P.-t. Sr. H.M.O. 42
Stoke-on-Trent H.M.C. Jr. H.M.O. or Sr. H.O. 50
Yorkshire. East Riding H.M.C. Sr. H.O. 51

PLASTIC SURGERY

Chepstow. Mon. Sr. H.O. 45
Leeds R.H.B. Area. H.O. 46
Sheffield United Hosps. Sr. H.O. .. 50

PSYCHIATRY

North West Met. R.H.B. P.-t. Cons. 41
Leeds R.H.B. Cons. & Sr. H.M.O. .. 41
Leeds R.H.B. Regs. 47
Leeds United Hosps. Reg. 46
Lichfield. St. Matthew's. Jr. H.M.O. 47
Newcastle R.H.B. Cons. 41
Nottingham. Mapperley. Reg. .. 48

Page

Scotland. South-Eastern R.H.B. Sr. Reg. & Reg. 49
Scotland. Western R.H.B. Regs. .. 49
South East Met. R.H.B. Sr. Reg. .. 50
Warwick. Central Mental. Jr. H.M.O. 51
Yorkshire. East Riding H.M.C. Sr. H.O. & H.O. 51

RADIOLOGY

North West Met. R.H.B. P.-t. Cons. 41
South East Met. R.H.B. P.-t. Cons. 41
Manchester R.H.B. Cons. 42
Scotland. South-Eastern R.H.B. Sr. Reg. 49
Sheffield R.H.B. P.-t. Cons. 42
Sheffield United Hosps. Reg. 50
Southend-on-Sea H.M.C. Locum Cons. 42

RADIOTHERAPY

Royal Free, W.C.1. P.-t. Sr. H.M.O. 41
St. George's, S.W.1. Reg. 43
St. Mary's, W.2. Reg. 43
Leeds R.H.B. Sr. H.M.O. 41
Oxford United Hosps. Reg. 49
Sheffield R.H.B. Sr. H.M.O. .. 42

SURGERY

Elizabeth Garrett Anderson, N.W.1. Reg. 42
Hosp. for Sick Child., W.C.1. Sr. H.O.'s 43
Italian, W.C.1. Hon. Cons. 41
London Jewish, E.1. H.O. 43
Prince of Wales's Gen., N.15. Sr. H.O. 43
Westminster, S.W.1, & Kingston, Surrey. Sr. Reg. 43
Bedford Gen. Reg. 44
Bournemouth. Royal Victoria. H.O. 44
Burton-on-Trent Gen. Infy. H.O. .. 44
Bury & Rossendale H.M.C. Pre-reg. H.O. 44
Canterbury. Kent & Canterbury. H.O 44
Carlisle. Cumberland Infy. Sr. H.O. 44
Douglas. Noble's I.O.M. Sr. H.O. .. 45
Dudley, Stourbridge & Dist. Sr. H.O.'s 45
Grimsby Gen. Reg. 45
Guildford. Royal Surrey County. H.O. 45
Hitchin. Lister. H.O. 46
Hove Gen. Sr. H.O. 46
Hull. Kingston Gen. H.O. 45
Isle of Thanet H.M.C. Sr. H.O.'s .. 46
Leeds R.H.B. Area. H.O.'s. 46
Leeds R.H.B. Regs. 47
Leicester Royal Infy. Reg. .. 47
Manchester R.H.B. Reg. 47
Manchester. West Manchester H.M.C. Sr. H.O. & H.O. 47
Newcastle Gen. Sr. H.O. 48
Newton Abbot, Devon. Sr. H.O. .. 48
Peterborough Mem. Reg. 49
Redhill. East Surrey. Pre-reg. H.O. 49
Redhill. East Surrey. Sr. H.O. .. 49
Rochdale. Birch Hill. H.O. 49
Romford. Victoria. H.O. 49
Scotland. Western R.H.B. Regs. .. 49
Scunthorpe & Dist. War Mem. Reg. 49
Sheffield R.H.B. Locum Reg. 50
Sheffield R.H.B. P.-t. Locum Cons. .. 42
Stockport Infy. Sr. H.O. 50
Stockport. Stepping Hill. Sr. H.O. .. 50
Stoke-on-Trent City Gen. H.O. .. 50
Stoke-on-Trent. North Staffs Royal Infy. H.O. 50
Wigan & Leigh H.M.C. Sr. H.O. .. 50
Wrexham. Maelor Gen. H.O. 50
Yorkshire. East Riding H.M.C. H.O. 51
Channel Islands. Jersey. Gen. R.S.O. 51

TROPICAL DISEASES

Queen Mary's (Roehampton), S.W.15. Jr. H.M.O. 43

UROLOGY

St. Peter's, St. Paul's & St. Philip's Hosps., W.C.2. Sr. Reg. 43

GENERAL

New York. New Rochelle. Internships 51

PUBLIC APPOINTMENTS 51

GENERAL PRACTICE 52

MISCELLANEOUS 52

The Terms and Conditions of Service of Hospital Medical and Dental Staff apply to all N.H.S. hospital posts we advertise, unless otherwise stated. Canvassing disqualifies, but candidates may normally visit the hospital by appointment.

Academic and Educational

UNIVERSITY OF MANCHESTER
NUFFIELD DEPARTMENT OF OCCUPATIONAL HEALTH

A REFRESHER COURSE IN INDUSTRIAL MEDICINE will be held during the period MONDAY, 8TH NOVEMBER–FRIDAY, 19TH NOVEMBER. The Course will include lectures, symposia and demonstrations dealing with some of the basic problems of industrial medicine. Admission to the Course will be strictly limited.

Syllabus and application forms may be obtained from the Secretary, Department of Occupational Health, The University, York-place, Manchester, 13. All applications should be received not later than 16th October.

The fee for the Course is £8 8s. Cheques should be made payable to "The Bursar."

COURSE IN ORTHOPÆDIC SURGERY
at
HARLOW WOOD ORTHOPÆDIC HOSPITAL
8TH–12TH NOVEMBER, 1954

8th Nov.	Introduction	Mr. S. A. S. MALKIN
	Mechanical derangements of the spine	Mr. A. N. BIRKETT
9th Nov.	Principles of tendon grafting	Mr. R. G. PULVERTAFT
	Operative demonstration of tendon graft	
	Clinical demonstration	
	Contractures of the hand	
10th Nov.	The rôle of the pathologist in the orthopædic team	Dr. A. B. HILL
	The rôle of the physician in the orthopædic team	Dr. J. MACFIE
	Peripheral nerve injuries—clinical or operative demonstration	Mr. J. P. CAMPBELL
11th Nov.	Changing aspects of tuberculosis	Mr. S. A. S. MALKIN
	The place of surgery in tuberculosis of bones and joints	Mr. J. P. JACKSON
	Operative demonstration (tuberculosis)	
12th Nov.	The neurological aspect of spinal injuries	Mr. F.W. HOLDSWORTH
		Dr. K. H. HARDY
	The principles of bone grafting	Mr. E. A. NICOLL
	Clinical demonstration	

The fee for the course (including lunch and tea) is 7 guineas.

Applications to be sent to, and further particulars obtained from, the Secretary, Harlow Wood Orthopædic Hospital, near Mansfield, Notts. Accommodation can be arranged, if required, at an associated hospital.

INSTITUTE OF ORTHOPÆDICS
Royal National Orthopædic Hospital
234, Great Portland-street, W.1
(UNIVERSITY OF LONDON)

COURSE ON POLIOMYELITIS
11TH–15TH OCTOBER

MONDAY, 11TH OCTOBER, TOWN SECTION	
The Virus and the Environment	Dr. F. O. MACCALLUM
Open discussion on above	Dr. F. O. MACCALLUM
The Pathological Anatomy of Poliomyelitis and its bearing on clinical features, including prognosis and recovery	Dr. H. A. SISSONS and Mr. W. J. W. SHARRARD
TUESDAY, 12TH OCTOBER, COUNTRY SECTION	
Treatment in convalescent phase: muscle charts: electrical examination	Mr. D. M. BROOKS and Miss L. M. PRIOR
Respiratory and bulbar paralysis	Dr. A. B. KINNIER-WILSON and Dr. F. H. STEVENSON
WEDNESDAY, 13TH OCTOBER, COUNTRY SECTION	
Reconstructive surgery	Mr. J. A. CHOLMELEY
Afternoon—GARSTON MANOR REHABILITATION CENTRE, NEAR WATFORD, HERTS.	
Rehabilitation	Group Captain C. J. S. O'MALLEY
THURSDAY, 14TH OCTOBER, TOWN SECTION	
Vascular phenomena	Mr. G. L. W. BONNEY
Some neurological problems of diagnosis	Dr. P. H. SANDIFER
Open for informal discussion on any aspect of poliomyelitis	
FRIDAY, 15TH OCTOBER, COUNTRY SECTION	
Resettlement	Mr. D. M. BROOKS
Appliances: prescription	Mr. H. J. SEDDON
Appliances: construction	Mr. W. TUCK

The fee for this course (including lunch and tea) is 7 guineas.

Early application should be made to The Dean, at 234, Great Portland-street, London, W.1.

ROYAL LONDON HOMŒOPATHIC HOSPITAL
Great Ormond-street and Queen-square, W.C.1

A short COURSE OF INSTRUCTION IN HOMŒOPATHIC THERAPEUTICS for medical practitioners and senior students of medicine will be held at the Hospital from 4TH to 6TH OCTOBER, 1954, inclusive, commencing at 9 A.M. The theme of the course will be homœopathy and pædiatrics and will include lectures and clinical demonstrations.

No admission cards will be issued or fee charged, but those wishing to attend should write to the Hospital to the Dean of the Education Course, who will be pleased to supply full particulars.

POSTGRADUATE INSTRUCTION IN PSYCHOLOGICAL MEDICINE

A COURSE designed for those studying for a DIPLOMA IN PSYCHOLOGICAL MEDICINE will commence in JANUARY, 1955. Instruction will be part-time and will occupy approximately 3 half-days a week during 6 academic terms; 3 terms being devoted to Part I and 3 terms to Part II. Students may enrol for either part separately but, except in special circumstances, will not be permitted to study for both parts concurrently.

Fees: £12 12s. per term or £70 for the whole course.

Further particulars may be obtained from the Director of Studies in Psychological Medicine, 10, Croxteth-road, Liverpool, 8, to whom application for admission to the Course should be sent as soon as possible. STANLEY DUMBELL, Registrar.

SOCIETY OF APOTHECARIES OF LONDON

DIPLOMA IN INDUSTRIAL HEALTH

The next Examination will begin on MONDAY, 6th DECEMBER, 1954. The following Examination will be held in July, 1955.

For Regulations apply Registrar, Apothecaries' Hall, Black Friars-lane, London, E.C.4.

TANCRED'S STUDENTSHIPS
DIVINITY : MEDICINE : LAW
£100 p.a. each. For men only

The Governors propose to Elect 1 Student in Divinity at Christ's College, Cambridge, on the result of the Scholarship Examinations to be conducted in DECEMBER, 1954, by the Queens', Christ's, St. John's, Emmanuel and Sidney Sussex Group of Colleges in the University of Cambridge. Candidates must have been born in England, Scotland or Wales, and be members of the Church of England and unmarried; they must also be within the ages of 17 and 22 years. Candidates should in addition to making the necessary arrangements with the Managers of the above Scholarship examinations send in a Petition to the Clerk to the Tancred Foundation by 1st November, 1954. Further announcements relating to the Physic and Law Studentships awarded by this Foundation will appear in February and April, 1955.

Apply for further particulars and Form of Petition stating kind of Studentship and mentioning this paper to the Clerk, R. M. C. HOWARD, Esq., D.S.O., 28, Lincoln's Inn-fields, London, W.C.2.

FACULTY OF ANÆSTHETISTS. Royal College of SURGEONS OF ENGLAND. Applications are invited from Fellows of the Faculty for 2 vacancies for TUTORS of the Faculty. The persons appointed would be required to give instruction to postgraduate students at the College for the following periods during the coming year:—

14th March–1st April, 1955.

3 consecutive weeks in October, 1955.

Students receive 1 hour's instruction each day, usually from 5 to 6 P.M. The honorarium is 5 guineas per session, and travelling expenses where applicable. The Faculty reserves the right to fill the vacancies by invitation.

Applications in writing should be sent to Mr. W. F. DAVIS, Secretary, Faculty of Anæsthetists, Royal College of Surgeons of England, and must reach him by not later than Monday, 1st November, 1954.

INSTITUTE OF OPHTHALMOLOGY. (University of LONDON.) Applications are invited for the post of Full-time ASSISTANT PATHOLOGIST. This post will be in the grade of Senior Lecturer, salary scale commencing at £1250, rising by annual increments of £100 to £1750 p.a. The post requires membership of the appropriate superannuation scheme. Family allowances are admissible.

Applications, together with copies of 3 recent testimonials, should reach the undersigned not later than 11th October, 1954.

C. F. SEATH, Secretary.

Institute of Ophthalmology, Judd-street, W.C.1.

INSTITUTE OF UROLOGY. In association with St. PETER'S, ST. PAUL'S AND ST. PHILIP'S HOSPITALS. Applications are invited from medically qualified practitioners (of approximately Senior Registrar status) for the post of MEDICAL RESEARCH ASSISTANT to the Institute of Urology. The applicant should be especially interested in metabolic problems. He will be expected to assist in the development of the new metabolic wards and to help with the investigations and treatment of patients admitted to this ward and to the associated hospitals. An Honorary contract with the Associated Hospitals will be granted to the successful applicant. The appointment will be for 1 year in the first instance. Commencing salary £1400 p.a. with increments—subject to annual review.

Applications to the Secretary, Institute of Urology, 10, Henrietta-street, Covent Garden, London, W.C.2. Applications to be received by 16th October, 1954.

UNIVERSITY OF LEEDS. UNITED LEEDS HOSPITALS. Applications are invited for appointment as SENIOR REGISTRAR AND TUTOR IN ORTHOPÆDIC SURGERY, at a salary on the scale £1100–£100–£1400 a year, at the teaching hospital. In addition to clinical duties the Senior Registrar and Tutor will be expected to take part in teaching.

Applications (3 copies), stating date of birth, qualifications, details of present and previous appointments with dates and experience of teaching, together with the names of 3 referees, should reach the Registrar, The University, Leeds, 2 (from whom further particulars may be obtained), not later than 18th October, 1954.

UNIVERSITY OF MELBOURNE, Australia. Applications are invited for the position of PROFESSOR OF SURGERY. The salary will be £A3500 p.a. with superannuation similar to F.S.S.U.

Further particulars and information as to the method of application may be obtained from the Secretary, Association of Universities of the British Commonwealth, 5, Gordon-square, London, W.C.1. The closing date for the receipt of applications, in Australia and London, is 15th October, 1954.

THE UNIVERSITY OF LEEDS. Department of Surgery. Applications are invited from suitably qualified persons for appointment to a newly established post of MEDICAL ARTIST at a salary of £450 a year. The successful candidate will be required to join the Federated Superannuation System for Universities.

Applications (3 copies), stating date of birth, qualifications and experience, together with the names of 3 referees, should reach the Registrar, The University, Leeds, 2 (from whom further particulars may be obtained), not later than 18th October, 1954.

THE UNIVERSITY OF LIVERPOOL. Applications are invited for the post of LECTURER (part-time) in charge of the Department of Venereology at a salary of £100 p.a. The Lecturer will be required to deliver a course of Lectures on Venereology in the Medical School and to act as internal examiner in the Final M.B. qualifying examination.

Applications, stating age, qualifications, and experience, together with the names of 2 referees, should be received not later than 2nd October, 1954, by the undersigned, from whom further particulars may be obtained.

STANLEY DUMBELL, Registrar.

NORTHERN IRELAND HOSPITALS AUTHORITY. Joint appointment by the Queen's University, Belfast, and the Authority. The Authority invite applications for a whole-time post in Dental Prosthetics and Mechanics which will be filled by an appointment made jointly by the Queen's University and the Authority. The appointment may be made in either of 2 grades, viz. : PRINCIPAL TUTOR PRINCIPAL REGISTRAR or SENIOR TUTOR SENIOR REGISTRAR and will, in the first instance, be for the period ending 30th September, 1955.

Applications should be made on a form which may be obtained (with further particulars) from the Secretary, Northern Ireland Hospitals Authority, Victory Buildings, 44–46, Queen-street, Belfast, and will be received not later than 23rd October, 1954.

VELLORE REUNION MEETINGS, Caxton Hall, WEDNESDAY, 6TH OCTOBER. Chairman : (3.30 P.M.) Sir Philip Manson-Bahr ; (7 P.M.) Dr. Edith Summerskill. Speakers include Dr. Howard Somervell and Dr. Donald Paterson.

Hospital Services : Senior Appointments

NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD.

Part-time CONSULTANT NEUROLOGIST, Queen Mary's Hospital for the East End, E.15 (2 sessions a week).

Applications (6 copies), and names of 3 referees, should reach the Secretary, 11A, Portland-place, London, W.1, by Saturday, 9th October.

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.

(1) CONSULTANT PSYCHIATRIST (part-time), Tavistock Clinic, 2/4, Beaumont-street, W.1, for 4 half-days a week. Applicants must have had a thorough training in both diagnostic and therapeutic aspects of child psychiatry. Preference will be given to candidates with psycho-analytic training and experience of teaching. Clinic may be visited by appointment with Medical Director.

Applications by 25th October, 1954.

(2) CONSULTANT RADIOLOGIST (part-time), Royal Northern Hospital, Holloway, N.7 (279 Beds), Wood Green and Southgate Hospital, N.11 (52 Beds), and Highlands Hospital, Winchmore Hill, N.21 (818 Beds), for 2 half-days a week at each.

Applications by 19th October, 1954.

(3) ASSISTANT ANÆSTHETIST (whole-time), Royal Northern Hospital, Holloway, N.7 (279 Beds). Salary £1500 (at age 32)–£1950. Successful candidate required to live in or near Hospital.

Applications by 21st October, 1954.

Hospitals may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Part-time CONSULTANT in Diagnostic Radiology to undertake 7 notional half-days a week in the following groups of hospitals:—

Greenwich and Deptford—2 notional half-days.

Dartford—2 notional half-days.

Woolwich—2 notional half-days.

Seamen's—1 notional half-day.

Candidates must have had a wide experience in the specialty and hold an appropriate diploma. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales). Candidates may visit the hospitals concerned.

Apply, stating nationality, age, sex, qualifications, and experience, including details of present appointment and of war service, together with the names and addresses of 3 referees, to the Secretary, Advisory Appointments Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 9th October, 1954.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires Part-time ALLERGIST (Senior Hospital Medical Officer grade) (1 half-day per week) for the Metropolitan E.N.T. Unit, St. Mary Abbots Hospital, W.8. Possession of higher medical qualification essential and preference given to candidates already holding senior allergy appointments in other hospitals and devoting whole of their working time to treatment of allergic conditions.

Applications (5 copies), giving date of birth, qualifications, experience, and names of 3 referees, to Secretary (S.1), South West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 16th October, 1954. Applicants may visit Unit by local arrangement.

ITALIAN HOSPITAL, Queen-square, London, W.C.1. (Member of the Association of Independent Hospitals.) Applications are invited for the post of HONORARY SURGEON, of Consultant status.

Applications, stating age, qualifications, present and past appointments, and accompanied by the names of 3 referees, should reach the Secretary at the Hospital not later than a fortnight after the appearance of this advertisement. Further particulars may be obtained from the Secretary.

ROYAL FREE HOSPITAL. Applications are invited from suitably qualified registered medical practitioners for the appointment of SENIOR HOSPITAL MEDICAL OFFICER in Pathology, V.D. Department. The present Senior Registrar is an applicant for the post. The appointment is full-time, duties to commence on 1st January, 1955.

Formal application, together with the names of 3 referees, should be made to the Secretary to the Board of Governors, the Royal Free Hospital, Gray's Inn-road, London, W.C.1, not later than 22nd October, 1954.

ROYAL FREE HOSPITAL. Applications are invited from suitably qualified registered medical practitioners for the appointment of CLINICAL ASSISTANT (Senior Hospital Medical Officer grade), Radiotherapy Department. The appointment is for 2 dermatological sessions per week. Duties to commence on 1st January, 1955.

Formal application, together with the names of 3 referees, should be made to the Secretary to the Board of Governors, the Royal Free Hospital, Gray's Inn-road, London, W.C.1, not later than 22nd October, 1954.

LEEDS REGIONAL HOSPITAL BOARD.

Whole-time CONSULTANT PSYCHIATRIST AND DEPUTY PHYSICIAN-SUPERINTENDENT for duties at Stanley Royd Hospital, Wakefield (2100 Beds). The successful candidate will have extramural duties at General Hospitals in the Wakefield and Dewsbury areas. Married accommodation with garden is available adjacent to the Hospital. Candidates should hold high qualifications in medicine and psychiatry and have had experience of administrative aspects of the specialty.

Whole-time CONSULTANT PSYCHIATRIST for duties at Menston Hospital, near Leeds (2500 Beds). The successful candidate will have extramural duties at associated general hospitals. An unfurnished family flat is available if required, but residential accommodation is available for a single person. Candidates should hold high qualifications in medicine and psychiatry.

Whole-time ASSISTANT PSYCHIATRIST AND DEPUTY MEDICAL SUPERINTENDENT (Senior Hospital Medical Officer scale) for duties at Meanwood Park Hospital, Leeds (700 Beds). The successful candidate may, subject to the direction of the Medical Superintendent, be required to visit other hospitals in the Region in connection with the Mental Deficiency Service. Residential accommodation for a married couple is available at the Hospital. Consideration will be given to applicants who wish to be non-resident.

Part-time CONSULTANT ANÆSTHETIST (9 sessions per week) for duties at hospitals in Pontefract and Goole. The person appointed to reside in Pontefract.

Whole-time ASSISTANT RADIOTHERAPIST (Senior Hospital Medical Officer scale) in the Regional Radiotherapy Service, for duties mainly at the Hull Centre under the supervision of the local and visiting Consultants. The Centre has approximately 1200 new cases annually, is equipped for deep and superficial X-ray therapy and radium treatment, and is functionally associated with the Centre at the General Infirmary at Leeds. The person appointed to reside in Hull.

Part-time CONSULTANT (9 sessions per week) in General Medicine and Geriatrics (approximately 45% of the duties) for the Bingley, Keighley, Skipton, and Settle area. The person appointed to reside in or near Keighley.

Whole-time CONSULTANT GERIATRICIAN to organise services in the Hull and East Riding areas. The present number of geriatric beds available is 425, which will shortly be increased to 500. The person appointed to reside in the Hull/Beverley area.

Applications (12 copies), stating age, qualifications, and details of appointments held showing dates, with names and addresses of 3 referees, to the Secretary, Park-parade, Harrogate, by 15th October, 1954.

NEWCASTLE REGIONAL HOSPITAL BOARD. ST. GEORGE'S HOSPITAL, MORPETH. (1210 Beds.) CONSULTANT PSYCHIATRIST AND DEPUTY MEDICAL SUPERINTENDENT (whole-time), resident, required at the above Hospital. This Hospital serves the County Borough of Tynemouth and part of the County of Northumberland, also the Municipal Borough of Whitley Bay (population 397,000). The Medical staff of the Hospital hold outpatient clinics at the Berwick Infirmary, Morpeth Cottage Hospital, Tynemouth Victoria Jubilee Infirmary and St. Thomas's Clinic, Newcastle. They make regular visits to the Section 20 Unit at Preston Hospital, North Shields, and provide a general domiciliary Consultant Service and a Psychiatric Consultant Service for the general hospitals in the admittance area. Applicants must have had wide experience of intramural and extramural psychiatry and be competent to take clinical charge, subject to the general administrative control of the Medical Superintendent, of a section of the Hospital and to participate in the work of the associated outpatient clinics and domiciliary Consultant Service in the area served by the Hospital. He must be prepared to visit the associated general hospitals as required and, if necessary, undertake the treatment of suitable cases in the general wards. A suitable house is available. Appointment subject to National Health Service (Superannuation) Regulations, 1950. Candidates may visit the Hospital by arrangement with the Medical Superintendent, from whom further information may be obtained.

Applications, together with names and addresses of referees (preferably), or testimonials, to a total of 3, to be sent to the Regional Psychiatrist, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 28 days.

NEWCASTLE REGIONAL HOSPITAL BOARD.
South East Durham Tuberculosis Administrative Area

ASSISTANT CHEST PHYSICIAN (whole-time) required in the above area; experience of tuberculosis desirable, but not essential. The person appointed will work as 1 of a team of 3, with duties at Chest Clinics in West Hartlepool and Stockton, and with care of inpatients. There are some 80 beds under direct control of the team, and an allocation of 80 beds at Poole Sanatorium. The successful applicant may be asked to be responsible to the Senior Consultant for the day to day administration of the Brierton Hospital, West Hartlepool (74 Beds).

Sedgefield Hospital Management Committee. Sedgefield General Hospital (370 Beds)

SENIOR CONSULTANT ANÆSTHETIST, whole-time, or part-time for a minimum of 9 notional half-days per week. A new unfurnished semi-detached house is available on a rental basis. Applicants must possess D.A. or F.F.A.R.C.S. Diploma.

Applications, together with names and addresses of referees (preferably), or testimonials, to a total of 3, to be sent to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 28 days.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the whole-time post of CONSULTANT RADIOLOGIST in charge of the Diagnostic Radiology Services in the Blackburn and District Hospital Centre (Blackburn Royal Infirmary, Queen's Park Hospital, Blackburn, Victoria Hospital, Accrington, &c.). Higher qualifications essential; appointee to live in area.

Application forms from the Senior Administrative Medical Officer to the Board, Cheetwood-road, Manchester, 8, to be returned by 7th October, 1954.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Part-time CONSULTANT ORTHOPÆDIC SURGEON (4 notional half-days a week) to the Medway and Gravesend Group of hospitals. Candidates must have had wide experience in orthopædic surgery and possess a Fellowship of a Royal College of Surgeons, or a Mastership in Surgery. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales). Candidates may visit the hospitals concerned.

Apply, stating nationality, age, sex, qualifications and experience, including details of present appointment and of war service, together with the names and addresses of 3 referees, to the Secretary, Advisory Appointments Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 9th October, 1954.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited from Female practitioners for an appointment as Part-time ASSISTANT PATHOLOGIST (9 notional half-days a week) to the area laboratory in the Brighton and Lewes Group of hospitals. The duties will include attendances at the New Sussex Hospital for Women. Candidates must have had general experience in pathology and possession of a higher qualification is desirable. Salary within the scale £1500–£50–£1950.

Apply, stating nationality, age, qualifications, and experience, including details of present appointment and of war service, together with the names and addresses of 3 referees, to the Secretary, Advisory Appointments Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 9th October, 1954.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time ASSISTANT RADIOTHERAPIST to the Radiotherapy Centre at Derbyshire Royal Infirmary. The successful candidate will work under the direction of the Consultant Radiotherapist-in-charge. Candidates should have a good clinical background and be in possession of the D.M.R.T. Salary scale £1500–£50–£1950.

Application forms and further details obtainable from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, 10. Forms to be returned by 23rd October, 1954.

SHEFFIELD REGIONAL HOSPITAL BOARD. Maximum Part-time CONSULTANT RADIOLOGIST for the Leicester Hospital Management Committee Groups.

Further details and application form from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, 10. Forms to be returned by 16th October, 1954.

SHEFFIELD REGIONAL HOSPITAL BOARD. Locum CONSULTANT SURGEON required for Mansfield and District General Hospital and King's Mill Hospital, Sutton-in-Ashfield, for 7 notional half-days weekly. Remuneration at the rate of 5 guineas per notional half-day. Candidates must possess a higher surgical qualification.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, naming 2 referees.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time ASSISTANT CHEST PHYSICIAN for the Lincoln area. Duties, under direction of the Consultant Chest Physician, include attendance at clinics in Lincoln and Grantham, the care of patients in Lincoln Isolation and Chest Hospital and Branston Hall Hospital. The successful candidate will be Deputy Physician-Superintendent of the latter hospital. Candidates should have good general medical experience and special experience in the treatment of chest diseases and tuberculosis. Salary scale £1500–£50–£1950.

Application form and further details from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Fulwood House, Old Fulwood-road, Sheffield, 10. Forms to be returned by 16th October, 1954.

SOUTHEND-ON-SEA HOSPITAL MANAGEMENT COMMITTEE. Locum CONSULTANT RADIOLOGIST required for part-time or full-time duties in the Group, commencing 1st October, 1954, for a period, in the first instance, of 2 months.

Apply immediately to J. C. FIELD, Secretary, General Hospital, Rochford, Essex.

MELBOURNE, AUSTRALIA. ST. VINCENT'S HOSPITAL. Applications are invited for the position of DIRECTOR OF ANÆSTHESIA. St. Vincent's Hospital is an Undergraduate and Postgraduate Teaching Hospital of the University of Melbourne. A salary £A3000 will be paid with a limited right of private practice. The appointment is permanent subject to a completion of an interval of 2 years probationary period. Details of appointment may be obtained from the undersigned or the Dean of the Faculty of Anæsthetists, London.

Applications close on 8th October, 1954.

E. W. R. GRACE, Secretary and Chief Executive Officer.

AUSTRALIA. ROCKHAMPTON HOSPITAL, QUEENSLAND, AUSTRALIA. Part-time MEDICAL OFFICERS. Applications in writing are invited for appointment for 3 years to the following part-time specialist appointments at the Rockhampton Hospital.

Physician: 1 session of 3 hours per week, divided into an outpatient session of 2 hours, and an inpatient session of 1 hour. Salary £270 p.a.

*E.N.T: 1 outpatient session of 3 hours per week and 1 in*patient session of 3 hours per week. Salary £540 p.a.

Rockhampton has a population of 40,000 and is the centre of a district of 90,000 in population.

Further particulars will be forwarded upon request. Applications should be addressed to the Secretary, Rockhampton Hospitals Board, Rockhampton, Queensland. Applications close on 17th November, 1954.

Hospital Services : Junior Appointments

BROMPTON HOSPITAL, S.W.3. Applications are invited for the post of NON-RESIDENT HOUSE PHYSICIAN, for which there are 3 vacancies, for 6 months from 1st December. Duties include work in Outpatient Department and wards. Salary £475 or £525 a year, according to experience.

Applications, stating age, qualifications with dates, nationality and appointments held, together with copies of testimonials, by 9th October to KENNETH A. F. MILES, House Governor.

CHARING CROSS HOSPITAL. Full-time Registrar in Anæsthesia, resident at Kingsbury Maternity Hospital, with duties at other Hospitals in the Group. The post is tenable for 1 year in the first instance. It is desirable that candidates should hold the Diploma in Anæsthesia.

Application forms, obtainable from the undersigned, should be returned by 4th October, 1954.

FRANK HART, Secretary to the Board.

CHARING CROSS HOSPITAL. Registrar (non-resident) in the E.N.T. Department, tenable at once, for 1 year in the first instance, with eligibility for reappointment.

Forms of application, obtainable from the undersigned, should be returned by 4th October, 1954.

FRANK HART, House Governor and Secretary to the Board.

DULWICH HOSPITAL (in association with King's College Hospital Medical School for teaching purposes), East Dulwich-grove, S.E.22. Applications invited for appointment as HOUSE OFFICER (general medical duties), vacant from 21st October, 1954. Pre-registration or subsequent post candidates considered. Resident.

Applications, stating age, qualifications and previous experience, with names of 2 referees, to the Group Secretary, Dulwich Hospital, not later than 8th October.

EAST END MATERNITY HOSPITAL, 384/398, Commercial-road, London, E.1. (60 Beds.)

RESIDENT SENIOR OBSTETRICAL OFFICER (Senior House Officer), required for 1 year.

RESIDENT OBSTETRICAL OFFICER (House Officer—third post), required for 6 months.

Posts recognised for M.R.C.O.G. Vacant 1st November, 1954.

Applications to be sent to the Group Secretary, Stepney Hospital Management Committee, Raine-street, Wapping, E.1.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. (ROYAL FREE HOSPITAL GROUP.) Applications are invited from registered Women medical practitioners for the post of Full-time SURGICAL REGISTRAR (non-resident). Recognised for the F.R.C.S. examination. Appointment for 1 year in the first instance, to commence 1st November, 1954. Salary in accordance with Ministry of Health scale for Registrars.

Applications, with names of 3 referees, should be sent to the Secretary, Elizabeth Garrett Anderson Hospital, by 8th October, 1954.

HAMMERSMITH HOSPITAL AND POSTGRADUATE MEDICAL SCHOOL, Ducane-road, London, W.12. Part-time REGISTRAR (dermatology), required as soon as possible for 3 sessions per week.

Applications, stating age, qualifications, experience, names of 2 referees, to Secretary, Board of Governors, by 4th October, 1954.

HACKNEY HOSPITAL, London, E.9. (844 Beds.) House PHYSICIAN (not pre-registration) required for 6 months from 20th October.

Apply, with copy testimonials, to Group Secretary at above address by 4th October, quoting H/HP.

HIGHLANDS GENERAL HOSPITAL, Winchmore Hill, London, N.21. ANÆSTHETIST (House Officer grade), resident, required. 100 active surgical and orthopædic beds, approximately 1200 operations annually.

Applications, with copies of 3 testimonials, to Hospital Secretary.

LONDON CHEST HOSPITAL. Hospitals for Diseases OF THE CHEST. 2 vacancies occur 1st December, 1954, for RESIDENT HOUSE PHYSICIAN. Appointments for 6 months, 4 in London, 2 at the Country Branch, near Letchworth, and posts are graded as House Officer. Duties include work in the Outpatient Department and Refill Clinic as well as in wards.

Applications, stating age, qualifications with dates, and previous appointments held, with copies of 3 testimonials, should reach the undersigned not later than 23rd October.

THOMAS BROWN, House Governor.
London Chest Hospital, E.2.

LONDON CHEST HOSPITAL (Country Branch). HOSPITALS FOR DISEASES OF THE CHEST. REGISTRAR in Clinical Pathology (Registrar grade). A vacancy occurs on 1st January, 1955, at the Hospital's Country Branch, Arlesey (near Letchworth). The appointment is a whole-time one and will be for 1 year in the first instance, and the holder may be resident or non-resident.

Applications, stating age, qualifications, with dates, and previous experience, together with copies of 3 testimonials should reach the undersigned not later than 30th October, 1954.

THOMAS BROWN, House Governor.

London Chest Hospital, E.2.

LONDON HOSPITAL, Whitechapel, E.1. Applications are invited for the post of SENIOR REGISTRAR to the Cardiac Department. Candidates must be Members of the Royal College of Physicians, London.

Applications (12 copies), giving the names and addresses of 3 referees, should be received by the House Governor, by 1st November, 1954. H. BRIERLEY, House Governor.

LONDON JEWISH HOSPITAL, Stepney Green, E.1. (130 Beds.) HOUSE SURGEON (pre-registration or first, second or third) required for 6 months commencing 5th November, 1954.

Applications, with copies of testimonials, to be sent to the Hospital Secretary.

LAMBETH HOSPITAL, Brook-drive, S.E.11. Locum *SENIOR MEDICAL REGISTRAR* required at above Hospital for an indefinite period. Higher qualification desirable. Experience in pædiatrics preferable.

Applications to Group Secretary at the Hospital by 2nd October, 1954.

PRINCE OF WALES'S GENERAL HOSPITAL, N.15. (219 Beds.) Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER RESIDENT HOUSE SURGEON to Orthopædic, Fracture and Traumatic Department, E.N.T. Department, and SENIOR CASUALTY OFFICER, for a period of 6 months, vacant 22nd November, 1954.

Application form from Secretary, Tottenham Group Hospital Management Committee, The Green, N.15, to be returned by 15th October, 1954.

PRINCE OF WALES'S GENERAL HOSPITAL, N.15. (219 Beds.) Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER RESIDENT SENIOR CASUALTY OFFICER, for a period of 6 months, vacant 23rd December, 1954.

Application form from Secretary, Tottenham Group Hospital Management Committee, The Green, N.15, to be returned by 6th November, 1954.

PRINCE OF WALES'S GENERAL HOSPITAL, N.15. (219 Beds.) Applications are invited from registered medical practitioners for the post of RESIDENT GYNÆCOLOGICAL HOUSE SURGEON (third post), for a period of 6 months, vacant 10th December, 1954.

Application form from Secretary, Tottenham Group Hospital Management Committee, The Green, N.15, to be returned by 6th November, 1954.

PRINCE OF WALES'S GENERAL HOSPITAL, N.15. (219 Beds.) Applications are invited from registered medical practitioners for the post of RESIDENT SENIOR HOUSE PHYSICIAN (third post), for a period of 6 months, vacant 28th December, 1954.

Application form from Secretary, Tottenham Group Hospital Management Committee, The Green, N.15, to be returned by 6th November, 1954.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, London, E.15. HOUSE PHYSICIAN (Male or Female) required (third post) for 6 months commencing 5th November, 1954.

Applications, with copies of recent testimonials, to Group Secretary, West Ham Group Hospital Management Committee, Stratford, E.15, by 9th October, 1954.

QUEEN MARY'S (ROEHAMPTON) HOSPITAL, Roehampton-lane, London, S.W.15. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER (500 Beds). The post affords facilities for gaining specialised experience in the treatment of tropical diseases and opportunities to study for higher qualifications. Whitley salary scale and conditions.

Forms of application may be obtained from the Medical Superintendent at the above address.

ROYAL NATIONAL THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.1, and Golden-square, W.1. RESIDENT HOUSE SURGEON (second or subsequent post). Applications are invited for a 6 months appointment with salary and conditions as laid down for House Officers in the terms and conditions of service in the National Health Service.

Applications, stating age, qualifications, full details of previous experience (particularly in this specialty), with copies of 1–3 recent testimonials, should be sent to the House Governor within the next few days.

WESTMINSTER HOSPITAL, St. John's-gardens, S.W.1. Applications invited for post of SENIOR MEDICAL REGISTRAR for 1 year in first instance from 9th December, 1954. Candidates must be M.R.C.P. (London).

Applications (11 copies), with names of 2 referees, to House Governor by 9th October.

WESTMINSTER HOSPITAL, St. John's-gardens, S.W.1, and KINGSTON HOSPITAL, 26, Wolverton-avenue, KINGSTON-ON-THAMES, SURREY. Joint appointment of SENIOR SURGICAL REGISTRAR. Applications invited for above post to start as soon as possible. Annual appointment up to 4 years. Successful candidate will work at Kingston Hospital for approximately 2 years, then at Westminster Hospital. Candidates must be F.R.C.S.

Applications (10 copies), with names of 3 referees, to reach House Governor, Westminster Hospital, within 10 days.

ST. PETER'S, ST. PAUL'S AND ST. PHILIP'S HOSPITALS, W.C.2. RESIDENT SURGICAL OFFICER (Senior Registrar grade), required for St. Paul's Hospital on 1st December, 1954. Applications invited from Male candidates on the British register who have completed their training in general surgery. Appointment for 6 months with opportunity for a further 6 months if recommended. Candidates should be prepared to spend 1 year at the Hospital if required.

Applications (12 copies), with 12 copies of 3 recent testimonials, should reach the House Governor, St. Peter's Hospital, Henrietta-street, W.C.2. by 16th October, 1954.

ST. GEORGE-IN-THE-EAST HOSPITAL, Raine-street, Wapping, E.1. Applications are invited for the post of CASUALTY OFFICER (Senior House Officer), resident or non-resident. (9 A.M.–5 P.M. Monday–Friday; 9 A.M.–1 P.M. Saturday.) Tenable for 1 year. Salary, &c., in accordance with national scale.

Application forms obtainable from, and returnable to, the Medical Superintendent.

ST. GEORGE'S HOSPITAL, S.W.1. Applications are invited for the post of REGISTRAR to the Radiotherapy Department. Candidates should possess the Diploma in Medical Radiotherapy or similar qualification. The appointment is for 1 year in the first instance, and the successful candidate will be required to take up his duties as soon as possible.

Applications, giving details of age, education, qualifications, experience, and the names of 2 referees, should reach the undersigned not later than 15th October, 1954.

P. H. CONSTABLE, House Governor.

ST. MARY'S HOSPITAL, W.2. Applications are invited from suitably qualified practitioners for the post of non-resident Whole-time REGISTRAR to the Department of Radiotherapy. Preference will be given to candidates holding a postgraduate Diploma in Radiotherapy, and the successful candidate will be required to commence duty as soon as possible.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, and details of previous and present appointments, together with the names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, not later than 5th October, 1954.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. There will be a vacancy for a Whole-time ASSISTANT MEDICAL REGISTRAR (Registrar grade) on 16th December, 1954.

Further particulars and form of application, which must be returned not later than Monday, 11th October, 1954, may be obtained from the undersigned.

H. F. RUTHERFORD, House Governor and Secretary.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. There will be vacancies for the following Senior House Officers on 15th January, 1955 :—

2 HOUSE PHYSICIANS.
2 HOUSE SURGEONS.

Further particulars and form of application, which must be returned not later than 1st November, 1954, are obtainable from the undersigned.

H. F. RUTHERFORD, House Governor and Secretary.

WEST END HOSPITAL FOR NEUROLOGY AND NEUROSURGERY (temporarily housed at St. Charles' Hospital, Ladbroke-grove, W.10). Applications are invited for the resident post of SENIOR HOUSE PHYSICIAN (Senior House Officer grading), Organic Neurology. The Hospital will remove to a new building (W.1) in the New Year.

Applications, stating age, qualifications, experience, together with the names and addresses of 2 referees, to be forwarded to the Hospital Secretary, West End Hospital, 73, Welbeck-street, W.1, by 4th October.

ASHFORD HOSPITAL, Ashford, Middlesex. Staines GROUP HOSPITAL MANAGEMENT COMMITTEE. RESIDENT HOUSE SURGEON (Male) required at above Hospital, for Orthopædic and Traumatic Unit. 6 months appointment, vacant on 26th October, 1954. Preference given to pre-registration candidates.

Applications, stating age, qualifications and experience, with copies of up to 3 recent testimonials, to be sent to Medical Director of Hospital.

ASHTON, HYDE AND GLOSSOP HOSPITAL MANAGE-MENT COMMITTEE. SENIOR HOUSE OFFICER (medicine) required at Ashton-under-Lyne General Hospital, vacant mid-October.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 testimonials, should be forwarded to the Group Secretary, Astley-road, Stalybridge, Cheshire.

ASHTON, HYDE AND GLOSSOP HOSPITAL MAN-AGEMENT COMMITTEE. SENIOR HOUSE OFFICER (obstetrics and gynæcology) required at Ashton-under-Lyne General Hospital. There are 82 obstetric and 26 gynæcological beds. Recognised for M.R.C.O.G. Vacant early November.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 testimonials, should be forwarded to the Group Secretary, Astley-road, Stalybridge, Cheshire.

AYLESBURY, BUCKINGHAMSHIRE. STOKE MANDE-VILLE HOSPITAL. (611 Beds.) RESIDENT HOUSE PHYSICIAN for Department of Medicine, vacant 19th October. Recognised pre-registration post, but applications from registered practitioners will be considered.

Apply, with copies of 2 testimonials, to Administrative Officer.

BARNSLEY. BECKETT HOSPITAL. (182 Beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time REGISTRAR (pathology) required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 4th October, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

BEDFORD GENERAL HOSPITAL. (437 Beds.) Resident HOUSE SURGEON (gynæcology and obstetrics) required immediately. Non-pre-registration post. The appointment offers exceptional opportunity for general experience in a busy department.

Applications, stating age, nationality, qualifications, previous appointments, together with copies of 2 testimonials, should be forwarded to Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford, by not later than 2nd October, 1954.

BEDFORD GENERAL HOSPITAL. (437 Beds.) North WEST METROPOLITAN REGIONAL HOSPITAL BOARD. GENERAL SURGICAL REGISTRAR (resident) required at above Hospital. Hospital may be visited by direct appointment. Post vacant immediately.

Application forms obtainable from, and returnable to, Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford, by 2nd October, 1954.

BIRMINGHAM REGIONAL HOSPITAL BOARD. Dudley ROAD HOSPITAL, BIRMINGHAM, 18. Whole-time REGISTRAR in General Medicine; principally to assist in the development of clinical research into the ætiology of chronic bronchitis. Experience specialty required but experience research not essential.

Application forms from Secretary, 10, Augustus-road, Birmingham, 15, to be returned before 11th October, 1954. Candidates may visit Hospital.

BIRMINGHAM, 13. SORRENTO MATERNITY HOS-PITAL. (112 Beds including 24 premature baby cots.) OBSTETRIC HOUSE SURGEON. Appointment recognised for D.Obst.R.C.O.G. Hospital affiliated to Birmingham Medical School for training of students.

Applications for above post, vacant 1st November, 1954, to the Obstetrician not later than 29th September, 1954.

BIRMINGHAM. THE UNITED BIRMINGHAM HOS-PITALS. Applications are invited for the non-resident post of SENIOR HOUSE OFFICER or REGISTRAR in Pædiatrics (grading according to experience) for duties at the Birmingham Maternity Hospital, Loveday-street, and the Maternity Department of the Queen Elizabeth Hospital. Previous experience, resident, in a Children's Hospital is essential, and candidates should hold the D.C.H. Post vacant immediately.

Applications, stating age, nationality, qualifications and previous appointments, should be forwarded to the House Governor, Birmingham and Midland Hospitals for Women, Showell Green-lane, Birmingham, 11, not later than 2nd October, 1954.

BIRMINGHAM. THE UNITED BIRMINGHAM HOS-PITALS. THE BIRMINGHAM AND MIDLAND HOSPITAL FOR WOMEN, Showell Green-lane, SPARKHILL, BIRMINGHAM, 11. Applications are invited from registered medical practitioners for the post of RESIDENT GYNÆCOLOGICAL HOUSE SURGEON for duty with the Professorial Unit, vacant 1st October, 1954. The appointment is recognised for the M.R.C.O.G.

Application forms obtainable from the House Governor at the above address, to be returned immediately.

G. A. PHALP, Secretary.

BISHOP'S STORTFORD, HERTFORDSHIRE. HAY-MEADS HOSPITAL. Applications invited from registered practitioners for post of HOUSE OFFICER (obstetrics), Male or Female (first, second, or third post held), to commence 1st November, 1954, for period of 6 months. Duties in connection with Obstetric Department, Neonatal Nursery and pædiatric ward of 24 beds. Salary £425–£525 p.a., less £125 in respect of residential facilities.

Applications, stating nationality, age, qualifications and experience, with copies of recent testimonials or names of referees, to Hospital Secretary as soon as possible.

BLACKBURN AND DISTRICT HOSPITAL MANAGE-MENT COMMITTEE. SENIOR HOUSE OFFICER (anæsthetics) required. Residence and duties mainly at Queen's Park Hospital, Blackburn, with sessions at the Blackburn Royal Infirmary and Accrington Victoria Hospital as arranged by the Consultant Anæsthetist. Post recognised for D.A. and F.F.A.R.C.S.

Apply to Secretary of the Committee, with names of 2 referees or copies of testimonials, Royal Infirmary, Blackburn.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL, Shelley-road. (492 Beds.) BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of HOUSE SURGEON for General and Thoracic Surgery. The post, which becomes vacant on 22nd September, is recognised for the F.R.C.S. examination and pre-registration purposes.

Applications to the Deputy Hospital Secretary.

BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. ROYAL VICTORIA HOSPITAL, WEST-BOURNE, HANTS. Applications are invited for the appointment of HOUSE SURGEON for E.N.T. and ophthalmic duties, vacant immediately. In addition to duties at the above Hospital, the successful candidate will be required to assist in the E.N.T. outpatient clinics at the Royal Victoria Hospital, Bournemouth, and Poole General Hospital. The appointment is recognised for the D.O. and D.L.O. Diplomas but not for pre-registration purposes.

Applications to the Deputy Hospital Secretary, Royal Victoria Hospital, Shelley-road, Bournemouth.

BRECHIN, ANGUS. STRACATHRO HOSPITAL. Applications are invited from medical practitioners of 2 years standing for the post of SENIOR HOUSE OFFICER to the area Geriatric Unit at Stracathro Hospital and Brechin Infirmary. The Unit, comprising some 140 Beds, undertakes active treatment and rehabilitation under the direction of the Regional Consultant in Geriatrics. Salary scale £745 p.a., less £150 for residential emoluments.

Applications, accompanied by 3 recent testimonials or naming 3 referees, should be addressed to the Group Medical Superintendent at Stracathro Hospital.

BOLTON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. GROUP LABORATORIES. RESIDENT PATHOLOGIST (Senior House Officer grade), vacant 16th October, tenable for 12 months and recognised for the Dip.Path.

Applications, stating age, nationality, qualifications, experience, and the names of 2 referees, to be sent immediately to Group Secretary, The Royal Infirmary, Bolton.

BRIGHTON, 7. ROYAL SUSSEX COUNTY HOSPITAL. Locum HOUSE PHYSICIAN (House Officer grade) required at the above Hospital from 4th to 31st October, inclusive.

Applications, with details of age, experience, &c., to the Administrative Officer.

BURTON-ON-TRENT GENERAL INFIRMARY. (251 Beds.) RESIDENT HOUSE SURGEON required for General Surgical Unit. Designated for Pre-registration Service. The Hospital is recognised for the F.R.C.S.

Applications, with full details, naming 2 referees, should be sent to the Secretary.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. ROSSENDALE GENERAL HOSPITAL. SENIOR HOUSE OFFICER (medical), resident or non-resident.

Applications, giving names of 2 referees, should be made to—

H. WILKINSON, Esq., Group Secretary.

Bury General Hospital, Bury, Lancs.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. BURY GENERAL HOSPITAL. HOUSE OFFICER (pre-registration), surgery.

Apply, stating age, qualifications, and names and addresses of 2 referees, to H. WILKINSON, Group Secretary.

Bury General Hospital, Bury, Lancs.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (276 Beds.) GENERAL SURGICAL AND UROLOGICAL HOUSE SURGEON (pre-registration, first, second or third post). The above post, which is recognised for the F.R.C.S., becomes vacant in October, 1954. National Health Service salary and conditions.

Applications, together with copies of 2 testimonials, to be addressed to the Hospital Secretary at the above Hospital.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (276 Beds.) EAR, NOSE AND THROAT AND EYE DEPARTMENTS. SENIOR HOUSE OFFICER. Salary £745 p.a. Post vacant early December, 1954. Approved for F.R.C.S. and special diplomas.

Applications together with copies of 2 recent testimonials, to be addressed, to the Hospital Secretary at the above Hospital

CARLISLE. CUMBERLAND INFIRMARY. (340 Beds.) Applications are invited for the appointment of SENIOR HOUSE OFFICER (general surgery) which is recognised for the F.R.C.S. examinations and is for a period of 1 year.

Applications, giving the names of 2 referees, should be sent to the Secretary as soon as possible.

CARDIFF HOSPITAL MANAGEMENT COMMITTEE. 2 SENIOR HOUSE OFFICERS required at Orthopædic Centre for South Wales at new Prince of Wales Orthopædic Hospital, Rhydlafar, near Cardiff, of 222 Beds (being extended to 292 Beds) plus 70 at country branch. Outpatients branch in Cardiff. Accommodation for single officers.

Application form from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

CARDIFF. ST. DAVID'S HOSPITAL. (656 Beds.) CARDIFF HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (resident or non-resident) required immediately for Geriatric Unit (200 Beds).

Form of application from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

CHELTENHAM GENERAL AND EYE HOSPITAL. (170 Beds.) RESIDENT SENIOR HOUSE OFFICER (casuality) required.

Applications, giving details of qualifications and experience and names of 3 referees, to the Group Secretary, Sandford-road, Cheltenham.

CHELTENHAM GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post of RESIDENT SENIOR HOUSE OFFICER in Pathology. The successful applicant will work in the Group Laboratory at the Cheltenham General Hospital. Salary in accordance with Whitley Council terms and conditions of service. The post is tenable for 1 year in the first instance.

Applications, with the names of 3 referees, to be forwarded to the undersigned forthwith stating age, qualifications and experience. STANLEY T. DAVIS, Group Secretary.

General Hospital, Cheltenham.

CHELTENHAM MATERNITY HOSPITAL. Cheltenham GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of RESIDENT OBSTETRIC OFFICER. The Hospital which is recognised for the purpose of training for the D.Obst.R.C.O.G. has 50 Beds and deals with the majority of abnormal midwifery cases in North Gloucestershire. The appointment is for a period of 6 months and the salary will be £425, £475, or £525 p.a., less £125 in respect of residential emoluments. The appointment will be vacant in early December.

Applications, stating age, qualifications and experience and accompanied by copies of 3 recent testimonials, should be sent to the Secretary, Cheltenham Group Hospital Management Committee, General Hospital, Cheltenham.

CHERTSEY, SURREY. ST. PETER'S HOSPITAL (late Botleys Park War Hospital). (430 Beds.) Required, SENIOR HOUSE OFFICER ANÆSTHETIST. Appointment recognised for the D.A. and F.F.A.R.C.S. Duties to commence early October. Salary in accordance with terms and conditions of National Health Service.

Applications, together with names and addresses of referees, to be sent to the Physician-Superintendent, St. Peter's Hospital, as soon as possible.

CHEPSTOW, MONMOUTHSHIRE. PLASTIC SURGERY, JAW INJURIES AND BURNS CENTRE, ST. LAWRENCE HOSPITAL. (100 plastic surgery, 50 orthopædic beds.) SENIOR HOUSE OFFICER in Plastic Surgery required towards end of September. Previous experience in specialty not essential. The successful candidate will receive a thorough training in plastic surgery and burns. Hospital intakes from most of Wales and provides extensive experience. A second Senior House Officer in Plastic Surgery was recently appointed and there is also a Senior House Officer in Orthopædics. Salary £745, less £150 board-residence.

Write, quoting 2 referees, to T. A. JONES, Group Secretary. 64, Cardiff-road, Newport, Mon.

CHICHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR in Gynæcology and Obstetrics. This appointment for 1 year (renewable) will be vacant on 4th November. Gynæcological beds and clinics at Royal West Sussex Hospital and St. Richard's Hospital, Chichester: 16-Bed Obstetric Unit at St. Richard's and relief duties at 50-Bed Unit at Rustington. Residence at St. Richard's Hospital. Previous experience in both branches essential. Hospitals may be visited by appointment with Consultant. Canvassing disqualifies. Salary (Whitley scale) £850 first, £965 second year less (at present) £150 p.a. for residence. National Health Service superannuation scheme.

Application forms to be had from the Group Secretary at Royal West Sussex Hospital, Chichester, must be submitted within 14 days of this notice.

COLCHESTER. ESSEX COUNTY HOSPITAL. (188 Beds.) COLCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following posts:—

SENIOR HOUSE OFFICER to Casualty and E.N.T. Departments. Post tenable for 6 months or 1 year. Recognised for F.R.C.S.

SENIOR HOUSE OFFICER to Casualty and Radiotherapy Departments. Post tenable for 6 months or 1 year. Recognised for F.R.C.S.

Applications, with copies of 3 testimonials, should be forwarded to the Group Secretary, 14, Pope's-lane, Colchester, Essex.

COVENTRY AND WARWICKSHIRE HOSPITAL. (354 Beds.) SENIOR HOUSE OFFICER (casualty). 1 of 3. Duties in Central Casualty Department. Recognised for F.R.C.S.

Applications to the Secretary, Group 20, Hospital Management Committee, Stoney Stanton-road, Coventry.

CROYDON. MAYDAY HOSPITAL. (618 Beds.) **Croydon** GROUP HOSPITAL MANAGEMENT COMMITTEE. CASUALTY OFFICER (Senior House Officer grade). Applications are invited for post which is vacant on 12th October. Recognised for Final F.R.C.S. examination. Particularly good for gaining experience in orthopædics and fracture work.

Application forms obtainable from GEORGE A. PAINES, Group Secretary, Hospital Management Committee, General Hospital, Croydon.

DERBY. DERBYSHIRE ROYAL INFIRMARY. (418 Beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time NON-RESIDENT REGISTRAR (neurosurgery) required. Duties also at other hospitals in the Derby group. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 4th October, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

DOUGLAS. NOBLE'S ISLE OF MAN HOSPITAL. (176 Beds.) Applications are invited from registered medical practitioners with previous hospital experience, preferably at a Teaching Hospital, for the post of SENIOR HOUSE SURGEON at this busy General Hospital. The senior of 4 House Officer posts. The post is now vacant, and is suitable for candidate seeking further clinical experience and opportunity for reading for higher qualification. Salary £745 p.a., with a deduction of £125 p.a. for board, lodging, &c., if resident.

Applications, giving relevant particulars, and copies of 2 recent testimonials, or names and addresess of 2 referees, should be forwarded to the Secretary, Noble's Isle of Man Hospital, Douglas.

DOUGLAS. NOBLE'S ISLE OF MAN HOSPITAL. (160 Beds.) Applications invited for post of RESIDENT ANÆSTHETIST. Candidates should have completed pre-registration service. The post becomes vacant at end of September. 2500 surgical operations carried out annually. Resident medical staff of 4. Salary £525 p.a., less £125 p.a. deducted for residence. Duties include rota duty in the medical wards and casualty.

Applications, with copies of 2 recent testimonials to the Secretary, Noble's Hospital, Isle of Man.

DUDLEY, STOURBRIDGE AND DISTRICT HOSPITAL GROUP. BIRMINGHAM REGION. Applications invited from registered practitioners, for following appointments:—

The Guest Hospital, Dudley (154 Beds)

SENIOR HOUSE OFFICER (resident), casualty. Post now vacant.

SENIOR HOUSE OFFICER (Anæsthetist). Post now vacant.

SENIOR HOUSE OFFICER (surgical). Post now vacant.

Corbett Hospital, Stourbridge (106 Beds)

SENIOR HOUSE OFFICER (resident), casualty. Post now vacant.

Wordsley Hospital, near Stourbridge (478 Beds)

SENIOR HOUSE OFFICER (resident), Anæsthetist. Post now vacant. In addition to general surgery, experience is available in gynæcology and there is a major Orthopædic Unit. Regional Plastic Surgery Unit at this Hospital.

SENIOR HOUSE OFFICER (surgical).

Applications, stating age, experience, with copies of 3 recent testimonials, to Group Secretary, The Guest Hospital, Dudley, Worcs.

DONCASTER ROYAL INFIRMARY. (Recognised under the regulations for the Fellowship and D.L.O.) DONCASTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER in the E.N.T. Department. Post vacant end of September.

Applications, stating age, qualifications, nationality, and giving details of experience, should be forwarded to—

ARTHUR JONES, Secretary to the Committee.

DENBIGH (near). LLANGWYFAN HOSPITAL. (400 Beds for the treatment of all types of pulmonary and non-pulmonary tuberculosis, and also contains a major Thoracic Surgical Unit.) CLWYD AND DEESIDE HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (Male or Female) required immediately at the above Hospital.

Applications to be sent to Group Secretary, "Rhianfa," Russell-road, Rhyl.

EAST FIFE HOSPITALS BOARD OF MANAGEMENT. Applications are invited for the post of REGISTRAR at Forth Park Maternity Hospital, Kirkcaldy (54 Beds), and Associated Antenatal Clinics. The Hospital is recognised by the Royal College of Obstetricians and Gynæcologists. Salary in accordance with national scale.

Apply, giving names of 3 referees, to the Medical Superintendent, East Fife Hospitals Board of Management, 243A, High-street, Kirkcaldy.

EXETER. ROYAL DEVON AND EXETER HOSPITAL. EXETER AND MID-DEVON HOSPITALS MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of HOUSE PHYSICIANS (2), vacant 7th and 17th November, 1954, respectively. These are recognised pre-registration appointments.

Applications, with copies of 2 recent testimonials, to the Hospital Secretary by 2nd October, 1954.

EXETER. ROYAL DEVON AND EXETER HOSPITAL. EXETER AND MID-DEVON HOSPITALS MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER (E.N.T. Department—31 Beds), vacant now. The post is recognised for the F.R.C.S. examination.

Applications, with copies of 2 recent testimonials, to the Hospital Secretary as soon as possible.

FARNBOROUGH HOSPITAL, Farnborough, Kent. CASUALTY OFFICER (Senior House Officer) required for 1 year from 12th October. Deduction for residence £150.

Apply, giving age, qualifications with dates, and experience, and naming 3 referees, to the Administrative Officer.

FARNBOROUGH HOSPITAL, Farnborough, Kent. (General—800 Beds.) RESIDENT SENIOR HOUSE OFFICER required for a busy E.N.T. Department with 4 specialist operating sessions, 5 outpatient clinics and a diagnostic hearing-aid centre. Recognised for D.L.O. and offers valuable experience in all aspects of E.N.T. work.

Apply, stating age, qualifications and experience, and naming 2 referees, to the Administrative Officer.

GLASGOW ROYAL INFIRMARY. Senior House Officer in Medicine. Duties at above Infirmary.

Write, giving 3 names for reference, not later than 9th October, 1954, to the Secretary, Board of Management for Glasgow Royal Infirmary and Associated Hospitals, 135, Buchanan-street, Glasgow, C.1.

GRIMSBY GENERAL HOSPITAL. (226 Beds. Recognised for Training for F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT SURGICAL REGISTRAR required. Married accommodation may be available. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 4th October, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

GRIMSBY GENERAL HOSPITAL. Grimsby Hospital MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER for casualty duties required 4th October, 1954. Resident post. Recognised by Royal College of Surgeons for the Final Fellowship examination. Hours: Normally 9 A.M.–6 P.M. Monday–Friday; 9 A.M.–12 NOON Saturday, sharing night duty on rota with all other resident staff. Establishment consists of Senior Hospital Medical Officer (casualty) and the post now being advertised. The Hospital possesses a well-equipped medical library.

Applications, with the names and addresses of 2 referees, to the Hospital Secretary, Grimsby General Hospital.

GUILDFORD ROYAL SURREY COUNTY HOSPITAL. (232 Beds.) RESIDENT HOUSE SURGEON required for general surgery. Post is vacant from 18th October and is tenable for 6 months; it is approved for pre-registration practitioners and recognised for the F.R.C.S. examination.

Applications, with copies of 3 testimonials, should be sent to the Hospital Secretary as soon as possible.

HALIFAX. ROYAL HALIFAX INFIRMARY. (301 Beds.) HOUSE PHYSICIANS (general medicine) required. Posts vacant 1st November. Approved pre-registration appointments.

Applications to Group Secretary, Royal Halifax Infirmary, Halifax.

HALIFAX. ROYAL HALIFAX INFIRMARY. (301 Beds.) HOUSE SURGEON (E.N.T. and ophthalmology) required. Post now vacant. Approved pre-registration appointment.

Applications to Group Secretary, Royal Halifax Infirmary, Halifax.

HULL. KINGSTON GENERAL HOSPITAL. (447 Beds.) HULL A GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SURGICAL HOUSE OFFICER (mainly gynæcology and orthopædic). Recognised pre-registration appointment. Salary £425, £475 or £525 according to experience. The post is resident and tenable for 6 months. Vacant end November.

Applications, with full particulars, to the Hospital Secretary.

HITCHIN, HERTFORDSHIRE. LISTER HOSPITAL. Applications are invited for the post of RESIDENT HOUSE SURGEON, vacant 12th October, 1954. Recognised as pre-registration post.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 recent testimonials, to be sent to the Medical Administrator, Lister Hospital, Hitchin.

HORNCHURCH. ST. GEORGE'S HOSPITAL. Junior HOSPITAL MEDICAL OFFICER (resident) required immediately at this Hospital which accommodates 339 chronic sick patients. The post offers excellent geriatric experience.

Applications should be forwarded to the Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford, as soon as possible.

HOVE GENERAL HOSPITAL, Sussex. (75 Beds.) Senior HOUSE OFFICER (recognised for the F.R.C.S.), vacant end September. Duties of Resident Surgical Officer. Appointment for 1 year.

Applications, giving particulars of qualifications, experience, &c., and naming 2 referees, to the Administrative Officer.

ILFORD, ESSEX. KING GEORGE HOSPITAL. There will be a vacancy for a HOUSE PHYSICIAN (pre or post-registration) at the above Hospital on 20th November, 1954. The post will be tenable for 6 months.

Applications, giving full particulars and accompanied by testimonials, should be sent to the undersigned within 7 days of the appearance of this advertisement.

H. F. HARRIS, Secretary,
Ilford and Barking Group Hospital Management Committee.
King George Hospital, Ilford.

IPSWICH BOROUGH GENERAL HOSPITAL. (273 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (resident Anæsthetist), vacant 9th October. The post, which is normally of 1 years duration, is recognised for the D.A and the F.F.A.R.C.S. examinations.

Applications, stating age, nationality, together with recent testimonials, to Hospital Secretary.

ISLE OF THANET HOSPITAL MANAGEMENT COMMITTEE.

General Hospital, Ramsgate (101 Beds)
SENIOR HOUSE OFFICER (surgical).

General Hospital, Margate (132 Beds)
SENIOR HOUSE OFFICER (surgical).

Recognised for F.R.C.S. and D.A. Salary £745 p.a., less charge for residential emoluments.

Applications, with copies of testimonials, to Hospital Secretary of appropriate hospital.

KESWICK. BLENCATHRA SANATORIUM, Threlkeld, KESWICK. (100 Beds.) Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER. The appointment is tenable for 3 years with the possibility of extension for a fourth year, but applications will also be considered from candidates desiring an appointment for a shorter term. Salary scale within the range of £775–£1075 p.a. according to experience. In addition to duties at the Sanatorium the person appointed may also be required to undertake duties at 1 or more of the Chest Centres in the area. The successful applicant will be given the tenancy of a modern semi-detached house in Threlkeld village at a nominal rental.

Applications, together with the names of 2 referees, should be submitted to the Secretary, East Cumberland Hospital Management Committee, Cumberland Infirmary, Carlisle, not later than 11th October, 1954.

KINGSTON HOSPITAL, Wolverton-avenue, Kingston-ON-THAMES. (520 Beds.) KINGSTON GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of REGISTRAR in Obstetrics and Gynæcology which becomes vacant on 22nd December, 1954. The post, which is resident, is recognised for the D.Obst.R.C.O.G. and the M.R.C.O.G. in the latter case as a combined appointment.

Application forms should be obtained from the Group Secretary, 35, Coombe-road, Kingston upon Thames, and returned to him not later than 2 weeks from date of insertion.

LUTON AND DUNSTABLE HOSPITAL, Luton, Bedfordshire. Applications are invited for the post of HOUSE PHYSICIAN, recognised as pre-registration post, vacant 5th October.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 recent testimonials, to be sent now to the Secretary.

LUTON AND DUNSTABLE HOSPITAL, Luton, Bedfordshire. (250 Beds.) NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Whole-time REGISTRAR required 1st October, 1954, for Fracture and Orthopædic Department and Accident Service at above Hospital. Post recognised for F.R.C.S. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary, Luton and Hitchin Group Hospital Management Committee, St. Mary's Hospital, Luton, Beds, by 30th September, 1954.

LEEDS A GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER (anæsthetics) for duties mainly at St. James's Hospital. The appointment, which is recognised for the D.A. and the F.F.A.R.C.S., will be for a period of 1 year, and the salary will be in accordance with the agreed terms and conditions of service of hospital medical and dental staffs—namely, £745 p.a., with an appropriate deduction in respect of board, lodging, and other services provided.

Applications, stating age, qualifications, experience &c., together with the names of 2 referees, to be forwarded to the undersigned as soon as possible.

J. FOLKARD, Secretary to the Committee.
Administrative Offices, St. James's Hospital, Leeds, 9.

LEEDS, 2. PUBLIC DISPENSARY AND HOSPITAL. LEEDS A GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of CASUALTY OFFICER (Senior House Officer) at the above Dispensary. The appointment will be for a period of 1 year. Salary in accordance with the agreed terms and conditions of service of hospital medical and dental staffs, with an appropriate deduction in respect of board, lodging, &c.

Applications, stating age, qualifications, experience, &c., together with the names of 2 referees, to be forwarded to the undersigned as soon as possible.

J. FOLKARD, Secretary to the Committee.
Administrative Offices, St. James's Hospital, Leeds, 9.

LEEDS. THE UNITED LEEDS HOSPITALS. Registrar in Psychiatry required. Non-resident post with opportunities for a further training in psychiatry. Work is carried out in conjunction with the Leeds University Department of Psychiatry.

Applications, stating age, qualifications and present and previous appointments with dates, with names of 3 referees should be sent to the Sub-Dean, School of Medicine, Leeds, 2, not later than 9th October, 1954.

LEEDS REGIONAL HOSPITAL BOARD AREA. Medical ACT, 1950. RESIDENT HOUSE OFFICER posts. Recognised pre-registration House posts will be available for the 6 months commencing 1st November, 1954, in the following hospitals approved under the Medical Act, 1950.

Scarborough Hospital (191 Beds)
1 Surgical (general surgery, orthopædic and E.N.T.).
1 Surgical (gynæcology and ophthalmology).
1 Medical.

County Hospital, York (222 Beds)
2 Surgical (general surgery and gynæcology). Recognised for F.R.C.S.

City Hospital, York (178 Beds)
1 Medical.

Hull Royal Infirmary and Sutton (242 Beds)
1 Surgical (ophthalmology). Recognised for D.O.M.S.
1 General Surgical (recognised for F.R.C.S.).
1 Surgical (orthopædic).

Kingston General Hospital, Hull (398 Beds)
1 Surgical (general surgery, gynæcology and orthopædic).

Westwood Hospital, Beverley (202 Beds)
1 Medical.

East Riding General, Driffield (249 Beds)
1 Medical.

Clayton Hospital, Wakefield (200 Beds)
1 Surgical (general surgery, E.N.T., and ophthalmology). Recognised for F.R.C.S.
1 Medical (general medical and pædiatric).

Pinderfields General, Wakefield (663 Beds)
1 General Surgical.
1 Medical.
1 Medical (neurology).
1 Surgical (thoracic).

General Hospital, Dewsbury (119 Beds)
1 Medical (general medical, pædiatric and dermatology).

Staincliffe General, Dewsbury (314 Beds)
1 Surgical (general surgery, orthopædic and E.N.T.).

Huddersfield Royal Infirmary (304 Beds)
1 General Surgical (recognised for F.R.C.S.).
1 Surgical (obstetrics and gynæcology). Recognised by R.C.O.G.

Royal Halifax Infirmary (301 Beds)
1 Surgical (ophthalmology and E.N.T.).
2 Medical.

Halifax General Hospital (425 Beds)
1 Medical.

Bradford Royal Infirmary (507 Beds)
1 Surgical (general surgery and urology). Recognised for F.R.C.S.
2 Surgical (orthopædic and casualty). Recognised for F.R.C.S.
1 Medical.

St. Luke's Hospital, Bradford (828 Beds)
1 Medical.
1 Medical (pædiatric).

Keighley Victoria Hospital (144 Beds)
1 Surgical (general surgery, orthopædic and E.N.T.). Recognised for F.R.C.S.

Otley General Hospital (170 Beds)
1 Medical (general medical and pædiatric).

St. James's Hospital, Leeds (1539 Beds)
3 General Surgical (recognised for F.R.C.S.).
1 Surgical (gynæcology). Recognised by R.C.O.G.
1 Surgical (plastic).
1 Surgical (urology).
7 Medical.
1 Medical (geriatric).
1 Medical (pædiatric).
1 Medical (dermatology).

St. Mary's Hospital, Leeds (216 Beds)
1 Midwifery (recognised by R.C.O.G.).

Seacroft Hospital, Leeds (60 pædiatric beds)
1 Medical (pædiatric).
1 General Surgical.

Harrogate and District General (249 Beds)
2 General Surgical (recognised for F.R.C.S.).

Candidates should express, where applicable, their preference for medical, surgical or midwifery posts within the same hospital on the application form.

Candidates wishing to apply for posts at more than 1 hospital should complete a separate form in respect of each hospital.

Application forms can be obtained from the Senior Administrative Medical Officer, Leeds Regional Hospital Board, Park-parade, Harrogate, or from the Dean, School of Medicine, Thoresby-place, Leeds, 2, and should be returned to either of the above named as soon as possible. Application may be made in advance of results of final examination.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the following REGISTRAR posts :—

Anæsthetics

Duties in the Hull A, Hull B and East Riding Groups. Recognised for the F.F.A. Duties may include thoracic anæsthesia (non-resident).

Dermatology

Duties mainly at the Bradford Royal Infirmary (40 dermatological beds). Large Outpatient Department—5000 new cases annually (resident).

General Medicine

Halifax Group (non-resident). Duties divided between general medical and geriatrics (110 general medical, 380 geriatric beds).

General Surgery

(*a*) Otley General Hospital (resident) (50 surgical beds). Consultant staff mainly from Leeds Teaching Hospitals. Appointment includes 2 sessions clinical work at the General Infirmary at Leeds.

(*b*) Bradford Royal Infirmary. 1 of 2 similar posts (may be non-resident) (82 general surgical beds).

General and Orthopædic Surgery

Halifax General Hospital (50 surgical beds) and Halifax Royal Infirmary (60 orthopædic beds). Duties approximately divided between general and orthopædic surgery (preferably resident).

Thoracic Surgery

Regional Thoracic Centre, Pinderfields General Hospital, Wakefield. Experience in thoracic surgery desirable. (56 beds under the Consultants to the Teaching Hospital). Resident —married quarters available.

Orthopædic Surgery

(*a*) Hull A Group (50 orthopædic beds), Hull B Group and East Riding Group (50 orthopædic beds) (non-resident). Includes some duties in the Casualty Department at the Hull Royal Infirmary.

(*b*) Huddersfield Royal Infirmary and other hospitals in the Huddersfield Group (34 orthopædic beds) (non-resident).

Psychiatry

(*a*) Oulton Hall Hospital, near Wakefield, and affiliated Mental Deficiency colonies (aggregating 780 Beds) (non-resident).

(*b*) Meanwood Park (Mental Deficiency) Hospital, Leeds (700 Beds) (resident—flat available for married couple without children).

(*c*) Clifton Hospital, York (1000 Beds) (resident/non-resident).

Facilities for attendance at the Leeds University will be provided if the successful candidates are studying for the D.P.M.

Applications, stating age, qualifications, and details of present and previous appointments with dates, together with the names and addresses of 3 referees, should be forwarded to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, not later than 7th October, 1954.

LEEDS, 9. ST. JAMES'S HOSPITAL. Leeds A Group HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners (Male and Female) for the appointment of SENIOR HOUSE OFFICER (geriatrics) vacant 1st November, 1954. The appointment will be for a period of 1 year and the salary will be in accordance with the agreed terms and conditions of service of hospital medical and dental staffs—namely, £745 p.a., with an appropriate deduction in respect of board, lodging, and other services provided.

Applications, stating age, qualifications, experience, &c., together with the names of 2 referees, to be forwarded to the undersigned as soon as possible.

J. FOLKARD, Secretary to the Committee.

Administrative Offices, St. James's Hospital, Leeds, 9.

LEEDS. KILLINGBECK HOSPITAL, York-road. (227 Beds.) SENIOR HOUSE OFFICER for above tuberculosis Hospital directly associated with Thoracic Surgical Unit. Accommodation available for married couple.

Apply, giving full details and names of 2 referees, to Medical Superintendent.

LICHFIELD (near). ST. MATTHEW'S HOSPITAL, BURNTWOOD, near LICHFIELD, STAFFS. Applications are invited for the appointment of JUNIOR HOSPITAL MEDICAL OFFICER (psychiatry) at the above Hospital (1300 mental beds). Resident accommodation available.

Applications, with full details and copies of recent testimonials, to Medical Superintendent.

LEICESTER ROYAL INFIRMARY. (492 Beds. Recognised for training for F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT or NON-RESIDENT SURGICAL REGISTRAR with some duties in the Casualty Department, required. Appointment for 1 year in first instance.

Apply to the Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 4th October, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

LEICESTER ROYAL INFIRMARY. (507 Beds.) Sheffield REGIONAL HOSPITAL BOARD. Whole-time NON-RESIDENT REGISTRAR (ophthalmology) required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 4th October, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

LEICESTER ISOLATION HOSPITAL AND CHEST UNIT, Groby-road, LEICESTER. (328 Beds.) Applications are invited for the appointment of RESIDENT SENIOR HOUSE OFFICER (surgical). Salary £745 p.a., less £150 p.a. residential emoluments. The appointment is tenable for 6 months and may be extended for a further period of 6 months. Experience will be gained in all branches of thoracic surgery, including cardiac surgery.

Applications, giving age, qualifications, dates, &c., and copies of 2 recent testimonials, to be forwarded as soon as possible to the Physician-Superintendent at the above Hospital.

LEAMINGTON SPA. WARNEFORD GENERAL HOSPITAL. (207 Beds.) SOUTH WARWICKSHIRE HOSPITAL GROUP. Applications invited for the post of CASUALTY OFFICER (Senior House Officer), Male or Female, resident or non-resident. Post vacant and suitable for one reading for higher qualifications, affording contact with all specialist units in the Hospital.

Applications, with names and addresses of 3 referees, to Hospital Secretary.

LIVERPOOL, 14. BROADGREEN HOSPITAL. Applications are invited from registered medical practitioners for appointment as SENIOR HOUSE OFFICER or HOUSE SURGEON (orthopædics), the grading to depend upon the qualifications and experience of the applicant appointed. Salary in the case of Senior House Officer will be £745 p.a. and in the case of House Surgeon £425–£475–£525 according to previous experience ; the appointment being recognised for pre-registration purposes.

Applications, on forms obtainable from the undersigned, to be returned completed within 10 days of the appearance of this advertisement. H. BLYTHE, Group Secretary.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the post of RESIDENT SURGICAL REGISTRAR at the Royal Albert Edward Infirmary, Wigan, vacant 30th September, 1954. Preference given to holders of higher surgical qualifications. Post recognised for F.R.C.S.

Apply as soon as possible, with full particulars, to Secretary, Wigan and Leigh Hospital Management Committee, Knowsley House, Wigan, giving the names of 2 referees.

MANCHESTER REGIONAL HOSPITAL BOARD. Registrar in Anæsthetics to the Bolton and District Group of hospitals, with main duties at Bolton Royal Infirmary and Bolton District General Hospital. Vacant 30th September and recognised for the D.A. and F.F.A.R.C.S.

Applications, stating age, nationality, qualifications, experience, and the names of 2 referees, should be sent immediately to Group Secretary, Bolton and District Hospital Management Committee, The Royal Infirmary, Bolton.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the resident post of REGISTRAR in Gynæcology and Obstetrics, to the Blackpool and Fylde Group of hospitals, with main duties at Victoria Hospital, Blackpool, vacant 1st November, 1954. Post recognised for M.R.C.O.G.

Applications, together with names and addresses of 3 referees, should be sent to the Group Secretary, Blackpool and Fylde Hospital Management Committee, Victoria Hospital, Blackpool.

MANCHESTER REGIONAL HOSPITAL BOARD. Applications are invited for the post of REGISTRAR in Orthopædics which is joint between the Rochdale and District and Bury and Rossendale Hospital Management Committees. Recognised under the F.R.C.S. regulations.

Apply at once to the Group Secretary, Central Offices, Birch Hill Hospital, Rochdale, Lancs.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the post of RESIDENT REGISTRAR in the Board's Non-tuberculous Thoracic Surgery Unit of 58 Beds at Park Hospital, Davyhulme. 1 year appointment, renewable. Post vacant early December.

Application forms from Secretary, Park Hospital, Davyhulme, Urmston.

MANCHESTER. WEST MANCHESTER HOSPITAL MANAGEMENT COMMITTEE.

Eccles and Patricroft Hospital (General Hospital—48 Beds)

1 SENIOR HOUSE OFFICER. Post now vacant.

1 HOUSE OFFICER (post-registration post). Post now vacant. Additional allowance of £50 p.a.

The work of the Hospital is mainly surgical and there is a busy Outpatient Department.

Forms from Secretary, Park Hospital, Davyhulme.

MANCHESTER, 20. WITHINGTON HOSPITAL. South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. RESIDENT CLINICAL PATHOLOGIST required. Post vacant immediately. Previous experience in pathology not essential, the post affording opportunities for gaining experience in all branches of clinical pathology.

Applications, with full details, to the Group Secretary at the above Hospital.

MANCHESTER, 20. WITHINGTON HOSPITAL. South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (anæsthetics) required. Post vacant immediately and recognised by the Royal College of Surgeons for the F.F.A.R.C.S. and for the D.A. The successful candidate will have the opportunity of experience at the various units within the Group.

Applications with full details to the Group Secretary at the above Hospital.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS, MANCHESTER. REGISTRAR in Obstetrics and Gynæcology. Applications are invited for the above appointment commencing 1st January, 1955. Salary at national scale. Initially the appointment will be for 1 year, renewable normally for a second year. The successful candidate will act during the first year as Resident Obstetric Surgeon in the obstetrical branch of the Hospital at Whitworth-street, and during the second year as Resident Surgical Officer in the gynæcological branch at Whitworth Park. The duties include some teaching, the supervision of the work of House Officers and resident Medical Students, and very considerable clinical responsibility. Candidates must, therefore, have had fairly full previous experience in obstetrics and gynæcology. A higher qualification is not essential.

Forms of application may be obtained from the undersigned. The closing date is 1st October, 1954.

A. R. WISE, General Superintendent.

Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited for 3 posts of HOUSE OFFICER in Gynæcology. Applicants must have had previous hospital experience in medicine and surgery. The posts are recognised for the purposes of the M.R.C.O.G. examination. The appointments are for 6 months commencing 1st January, 1955. Salary in accordance with national scale.

Application forms may be obtained from the undersigned and returned not later than 1st October, 1954.

A. R. WISE, General Superintendent.

Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited from provisionally registered medical practitioners for 3 posts of HOUSE OFFICER in Obstetrics. Salary in accordance with national scale. The appointments are for 6 months from 1st January, 1955.

Application forms may be obtained from the undersigned and returned not later than 1st October, 1954.

A. R. WISE, General Superintendent.

Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MAIDENHEAD HOSPITAL, St. Luke's-road, Maidenhead. Applications invited from registered practitioners for the post of HOUSE PHYSICIAN, vacant 1st December.

Applications, stating age, nationality, qualifications and experience, with names of 3 referees, to Hospital Secretary.

MAIDSTONE. KENT COUNTY OPHTHALMIC AND AURAL HOSPITAL. (113 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE OFFICER in the Ophthalmic Department of the above Hospital. The Hospital is recognised by the Examining Boards for the F.R.C.S. and the D.O. Appointment will be for 12 months. Salary £745 a year, less £150 a year for residential emoluments. Post vacant 1st October, 1954.

Applications should be forwarded as soon as possible to the Administrative Officer, Kent County Ophthalmic and Aural Hospital, Church-street, Maidstone.

MITCHAM. CUMBERLAND HOSPITAL, Whitford-gardens, MITCHAM, SURREY. (100 Beds.) Applications invited for the post of RESIDENT MEDICAL OFFICER (Registrar) in Tuberculosis at the above Hospital. Duties also in Thoracic Unit, St. Helier Hospital. Experience in specialty essential.

Forms of application, returnable by 8th October, obtainable from the Group Secretary, St. Helier Hospital, Carshalton, Surrey.

NEWCASTLE REGIONAL HOSPITAL BOARD.

Newcastle Tuberculosis Administrative Area

REGISTRAR CHEST PHYSICIAN (whole-time) required for the above area, which includes the Northern Counties Chest Hospital and an allocation of approximately 60 Beds at the Newcastle General Hospital (860 Beds). The appointment will be for 1 year in the first instance and may be renewed for a further period.

Newcastle upon Tyne Hospital Management Committee

REGISTRAR CHEST PHYSICIAN (whole-time), at Walker Gate Hospital, with duties in a chest clinic. A house is available in the Hospital grounds at a nominal rental. Appointment for 1 year in the first instance and may be renewed for a further year.

Darlington Hospital Management Committee

REGISTRAR PHYSICIAN (whole-time), resident, Darlington Memorial Hospital and Hundens Unit (307 Beds). Single accommodation available. Appointment for 1 year in the first instance and may be renewed for a further period.

Tees-side Hospital Management Committee

REGISTRAR PATHOLOGISTS (2), whole-time, required for Area Group Laboratory. Appointments offer unique opportunity to obtain training in all branches of clinical pathology. Appointments for 1 year in the first instance and may be renewed for a further period.

Darlington Hospital Management Committee

REGISTRAR E.N.T. SURGEON (whole-time), resident, for duties at Darlington Memorial Hospital (Hundens Unit). Post is recognised for the D.L.O.

South Shields District Hospital Management Committee

REGISTRAR ANÆSTHETIST (whole-time), resident or non-resident, single or married accommodation available. Appointment for 1 year in the first instance and may be renewed for a further period. Post recognised for F.F.A.R.C.S.

Applications, together with names and addresses of referees (preferably) or testimonials, to a total of 3, to be sent to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 14 days.

NEWCASTLE GENERAL HOSPITAL. Newcastle upon TYNE HOSPITAL MANAGEMENT COMMITTEE. DEPARTMENT OF OBSTETRICS. OBSTETRICAL HOUSE SURGEON (70 Beds). The above resident post becomes vacant on 1st November, 1954. This post is recognised for the purpose of Pre-registration Service and preference will be given to provisional registered persons who have served 6 months in a medical or surgical post since qualification. The department is recognised for the Diploma of M.R.C.O.G., and D.Obst.R.C.O.G., and undertakes the training of Medical Students in the University of Durham.

Applications should be addressed to the Secretary, Newcastle General Hospital, Westgate-road, Newcastle upon Tyne, 4, together with 1 copy of 2 recent testimonials, by 16th October, 1954.

NEWCASTLE GENERAL HOSPITAL. (861 Beds.) NEWCASTLE UPON TYNE HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (general surgical wards). The above resident post, tenable for 12 months, becomes vacant on 1st October, 1954.

Applications, with 1 copy of 2 testimonials, should be sent to the Secretary, Newcastle General Hospital, Westgate-road, Newcastle upon Tyne, 4, as soon as possible.

NEWCASTLE GENERAL HOSPITAL. (861 Beds.) NEWCASTLE UPON TYNE HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (Casualty Department). The above resident (or non-resident) post, tenable for 12 months, becomes vacant on 6th October, 1954. This post is recognised for the 6 months training in casualty work now required of candidates for the Final F.R.C.S.

Applications, with 1 copy of 2 testimonials, should be sent to the Secretary, Newcastle General Hospital, Westgate-road, Newcastle upon Tyne, 4, as soon as possible.

NEWTON ABBOT HOSPITAL. (General Section—65 Beds.) RESIDENT SENIOR HOUSE SURGEON (Male or Female) required immediately. Married quarters available.

Applications, stating qualifications, nationality, age, with copy testimonials, to be sent to the Group Secretary, Torquay District Hospital Management Committee, 62/64, East-street, Newton Abbot, S. Devon.

NEWPORT, MONMOUTHSHIRE. ROYAL GWENT HOSPITAL. (260 Beds.) JUNIOR HOSPITAL MEDICAL OFFICER or SENIOR HOUSE OFFICER (E.N.T. and ophthalmic) required during October. National salary, less £125 board-residence. Grade depends on period since qualification. Recognised D.L.O. Covers 23 E.N.T. and 8 eye beds.

Write, quoting 2 referees, to T. A. Jones, Group Secretary. 64, Cardiff-road, Newport, Mon.

NOTTINGHAM. CITY HOSPITAL. (804 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (pædiatrics), vacant 12th October, 1954. The post is approved for the D.C.H.

Applications, stating age, nationality, qualifications and experience, together with copies of not more than 3 testimonials, to be sent to the Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM. FIRS MATERNITY HOSPITAL. (40 Beds.) Required, RESIDENT SENIOR HOUSE OFFICER (obstetrics). Post vacant 8th November, 1954. Recognised for D.Obst.R.C.O.G. Previous experience in obstetrics an advantage.

Applications, with copies of 3 testimonials, to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM CHILDREN'S HOSPITAL. (136 Beds. Recognised for the D.C.H.) Applications are invited for the post of RESIDENT HOUSE PHYSICIAN (recognised for pre-registration), which falls vacant at the beginning of November. The post is tenable for 6 months.

Applications, with copies of 2 testimonials, should be sent to the Secretary, Nottingham Children's Hospital, Chestnut-grove, Nottingham.

NOTTINGHAM GENERAL HOSPITAL. (441 Beds. Recognised for the F.F.A.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT or NON-RESIDENT REGISTRAR (anæsthetics) required. Appointee will be 1 of a team of 4 who also cover Nottingham Hospital for Women and Nottingham Children's Hospital on a 3-monthly rota.

Apply to Secretary, *Sheffield Regional Hospital Board*, Old Fulwood-road, Sheffield, by 4th October, 1954, giving age, nationality, present and previous appointments with dates, naming 3 referees.

NOTTINGHAM GENERAL HOSPITAL. Applications are invited from registered medical practitioners (Male or Female—locum tenens considered) for the post of RESIDENT SENIOR ANÆSTHETIC HOUSE OFFICER. Duties to commence as soon as possible. Terms and conditions of service in accordance with published regulations of the Ministry of Health, £150 deducted for residential emoluments.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to—

HENRY M. STANLEY, Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. Applications are invited from registered general practitioners for the post of THIRD CASUALTY OFFICER (Senior House Officer grade). Salary (less £150 emoluments) and conditions of service in accordance with those laid down by the Ministry. Duties to commence as soon as possible. This post offers wide experience of casualty work. The Staff establishment requires only 1 night in 3 emergency work, and off duty permits time for study for higher examinations.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to—

General Hospital, Nottingham. HENRY M. STANLEY.

NOTTINGHAM GENERAL HOSPITAL. Applications are invited from registered medical practitioners for the post of SENIOR ORTHOPÆDIC AND FRACTURE HOUSE OFFICER (locum tenens considered). The post offers exceptional experience in traumatic surgery. Duties to commence at the end of November. Salary and conditions of service in accordance with Ministry regulations. If resident £150 deducted for emoluments.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to—

HENRY M. STANLEY, Group Secretary.

NOTTINGHAM. MAPPERLEY HOSPITAL. (1067 Beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time REGISTRAR (psychiatry) required. Single accommodation available. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 4th October, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

NORTHALLERTON. FRIARAGE HOSPITAL. (General —337 Beds.) NORTHALLERTON HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER (Physician), pre-registration post, required at the above Hospital, as from 20th October, 1954. National salary and conditions.

Applications to be made to the Group Secretary, Friarage Hospital, Northallerton, Yorkshire.

OXFORD. UNITED OXFORD HOSPITALS. Applications invited for the post of NON-RESIDENT REGISTRAR to the Department of Radiotherapy, Churchill Hospital, Oxford, commencing 1st December, 1954. Training includes clinical use of radioactive isotopes as well as other forms of radiotherapy. Recognised as training centre for D.M.R.T. Previous experience not essential.

Applications, on forms obtainable from the Administrator, Radcliffe Infirmary, Oxford, should be received not later than 14th October, 1954.

OSWESTRY. ROBERT JONES AND AGNES HUNT ORTHOPÆDIC HOSPITAL. ORTHOPÆDIC REGISTRAR required commence 1st November. First year of appointment will be at Peripheral Centre, Wrexham, and second year at base hospital, Oswestry.

Application forms from Group Secretary to be returned before 11th October, 1954. Candidates may visit hospitals concerned.

ORPINGTON HOSPITAL, Orpington, Kent. Applications are invited for the post of RESIDENT CASUALTY OFFICER (Male) at Senior House Officer grade for above General Hospital (813 Beds). Post recognised for F.R.C.S.

Applications to the Physician-Superintendent.

PETERBOROUGH MEMORIAL HOSPITAL. East ANGLIAN REGIONAL HOSPITAL BOARD. SURGICAL REGISTRAR at above Hospital. The successful candidate will be required to share duties in Casualty Department. Post offers wide experience. Appointment for 1 year, renewable for second year.

Applications, stating age, experience, and names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 11th October, 1954. Candidates invited to visit Hospital by direct arrangement with Hospital Management Committee Secretary at the Hospital.

PLYMOUTH, MOUNT GOLD ORTHOPÆDIC HOSPITAL (with Annexe 122 Beds). PLYMOUTH SPECIAL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER for the Orthopædic and Fracture Service, centring on Mount Gold Orthopædic and associated hospitals. Unfurnished house available. Position recognised by the Royal College of Surgeons. Vacancy immediately.

Applications, stating age, qualifications with dates, &c., and with copies of 2 recent testimonials, to be forwarded to the Secretary, Mount Gold Hospital, Plymouth, within 14 days of this advertisement appearing.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL. RESIDENT DENTAL HOUSE SURGEON, vacant immediately. Recognised for the Fellowship.

Applications, stating age, nationality, qualifications, and experience, with the names of 3 referees, to be sent to—

ARTHUR R. CASH, Group Secretary, Plymouth,
South Devon and East Cornwall General Hospital Group.
7, Nelson-gardens, Stoke, Plymouth.

READING AREA HOSPITALS. *Applications are invited* for post of SENIOR HOUSE OFFICER or JUNIOR HOUSE OFFICER (pathology). Previous experience in pathology desirable but not essential. Salary £745 or £525 p.a. respectively, less £125 board-residence.

Apply, stating age, qualifications with dates, nationality, present post, together with copies of recent testimonials, to Group Secretary, 3, Craven road, Reading.

REDHILL. EAST SURREY HOSPITAL, Shrewsbury-road, REDHILL, SURREY. REDHILL GROUP HOSPITAL MANAGEMENT COMMITTEE. Pre-registration HOUSE SURGEON. Post vacant 1st October for 6 months appointment.

Apply to Hospital Secretary.

REDHILL. EAST SURREY HOSPITAL, Shrewsbury-road, REDHILL, SURREY. SENIOR HOUSE OFFICER (mainly surgical) required at above Hospital.

Apply to the Hospital Secretary.

RHYL. ROYAL ALEXANDRA HOSPITAL. Clwyd and DEESIDE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for appointment, as from 1st November, 1954, of HOUSE PHYSICIAN at the above Hospital.

Applications, stating age, qualifications and experience, with copies of 2 recent testimonials, to be sent to the Group Secretary, "Rhianfa," Russell-road, Rhyl, within 14 days from the date of publication of this advertisement.

ROTHERHAM. DONCASTER GATE HOSPITAL. (155 Beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT MEDICAL REGISTRAR required with duties also at the Moorgate Hospital, Rotherham (355 Beds). Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 4th October, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

ROTHERHAM. OAKWOOD HALL SANATORIUM (100 Beds) AND THE CHEST CLINIC, ROTHERHAM. SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (chest diseases) required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 4th October, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

ROCHFORD, ESSEX. GENERAL HOSPITAL. Applications are invited for the post of RESIDENT HOUSE OFFICER to the *Obstetric and Gynæcological Department*, pre-registration post. The Hospital has 70 maternity beds, a gynæcological ward of 25 beds, and a Premature Baby Unit of 8 cots. Post vacant 20th October, 1954, and is recognised for the D.Obst. R.C.O.G.

Applications, &c., to be sent to the undersigned by 9th October, 1954. (1 testimonial sufficient from candidates seeking first appointment.) J. C. FIELD, Secretary.

ROCHFORD, ESSEX. GENERAL HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER to the Geriatric and Psychiatric Units at the above Hospital. A wide range of facilities are available at the Hospital for the investigation, treatment and rehabilitation of acute and chronic cases.

Applications, stating age, &c., to be sent to the undersigned by 7th October, 1954. J. C. FIELD, Secretary.

ROCHDALE. BIRCH HILL HOSPITAL. Rochdale AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON required at above Hospital. Pre-registration candidates eligible. Post recognised for 6 of the 12 months F.R.C.S. experience.

Apply to Group Secretary, Central Offices, Birch Hill Hospital, Rochdale, Lancashire, at once with full details.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) SENIOR HOUSE OFFICER required in the Department of Ophthalmology from 22nd September, 1954.

Applications should be addressed immediately to the Group Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

ROMFORD, ESSEX. VICTORIA HOSPITAL. (99 Beds.) RESIDENT HOUSE SURGEON (Male) required, vacant middle September, 1954. (Post not approved for pre-registration purposes.)

Applications should be forwarded to the Group Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

SALISBURY GENERAL HOSPITAL. Salisbury Group HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON to the Orthopædic Department. This appointment, which is for 6 months, is vacant at present.

Applications, stating age, nationality, and naming 2 referees, should be submitted to the Group Secretary, Odstock Hospital, Salisbury.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for appointments as SENIOR REGISTRAR and REGISTRAR in Psychiatry to the Royal Edinburgh Hospital for Nervous and Mental Disorders. The appointments are in accordance with National Health Service regulations.

Applications, giving particulars of age, qualifications, and previous experience, together with the names of 2 referees, should be submitted to the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh-gardens, Edinburgh, 3, by 16th October, 1954, indicating which appointment is desired.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of SENIOR REGISTRAR in Radiodiagnosis to the Edinburgh Northern Group of hospitals. The appointment is in accordance with National Health Service regulations.

Applications, giving particulars of age, qualifications, and previous experience, together with the names of 3 referees, should be submitted to the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh-gardens, Edinburgh, 3, by 16th October, 1954.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. GLASGOW DENTAL HOSPITAL AND SCHOOL. Applications are invited for 3 posts as DENTAL REGISTRAR in Orthodontics. The appointments will be whole-time and the main duties attaching to the posts will be within the Department of Orthodontics, Glasgow Dental Hospital. The candidates appointed may also be required to perform orthodontic duties elsewhere in the Region.

Applications (12 copies), stating age, previous experience, and qualifications, together with the names of 3 referees, should be submitted to the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, C.2, by 16th October, 1954.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the following appointments, which will be for 1 year in the first instance :—

REGISTRAR in E.N.T. Surgery at the Royal Infirmary, Glasgow.

REGISTRAR in Psychiatry, Bellsdyke Mental Hospital, Larbert.

REGISTRAR in Surgery at Falkirk Royal Infirmary.

REGISTRAR in Pædiatrics based at Seafield Hospital, Ayr, with duties also in general medicine at hospitals under the control of the Board of Management for Southern Ayrshire Hospitals.

REGISTRAR in Psychiatry based at Stobhill Hospital, Glasgow.

These appointments are subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 16th October, 1954.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR in Surgery at the Western Infirmary, Glasgow, which will be for 1 year in the first instance. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 9th October, 1954.

SCUNTHORPE AND DISTRICT WAR MEMORIAL HOSPITAL. (269 Beds. Recognised for the F.R.C.S.) Whole-time RESIDENT SURGICAL REGISTRAR required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 4th October, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. Applications invited for the following posts :—

(a) *RESIDENT SENIOR HOUSE OFFICER to the Plastic* and Jaw Unit of the Royal Hospital.

(b) NON-RESIDENT REGISTRAR to the Department of Radiology. Post vacant.

Applications should state age, qualifications, experience, and the names of 3 referees, and be sent immediately to the following :—

For post (a) the Superintendent, Royal Hospital, Sheffield, 1.

For post (b) the Chief Administrative Officer, The United *Sheffield Hospitals, West-street, Sheffield, 1.*

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time Locum SURGICAL REGISTRAR required immediately at the Grantham and Kesteven General Hospital. Remuneration £16 per week.

Apply to the Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, naming 2 referees.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time SENIOR ORTHOPÆDIC REGISTRAR (transitional appointment) required for 1 year in the first instance, but not beyond 31st December, 1955, at the Doncaster Royal Infirmary. Applications invited from Senior Orthopædic Registrars in their *fourth or subsequent years and from those who held such posts* for 3 years or more but vacated them after 1st January, 1951.

Applications, giving age, nationality, qualifications and previous appointments with dates, together with the names *and addresses of 3 referees, should be sent to the Secretary,* Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, to arrive not later than 11th October, 1954.

SOUTHEND GENERAL HOSPITAL. *Temporary* CASUALTY OFFICER required (Registrar grade) on a month-to-month basis, to commence 5th November, 1954. Duties chiefly in Casualty Department, which is under the supervision *of Consultant in orthopædic surgery. Opportunities for work* in fracture clinics in association with work of Orthopædic Department. Post recognised for F.R.C.S. if held for 6 months.

Applications, stating age, qualifications and experience, to be sent to the undersigned by 6th October, 1954.

J. C. FIELD, Secretary.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. *Applications are invited for an appointment as* Whole-time SENIOR REGISTRAR in Psychiatry to fill a vacancy in the approved trainee establishment at St. Augustine's *Hospital, Chartham Down, near Canterbury. Candidates should* possess the D.P.M. and have had wide experience in general medicine. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental *staffs (England and Wales), and will be for 1 year in the first* instance. The post will include opportunities for gaining further experience in a wide range of psychiatry including attendance at *adult outpatient clinics.* A house will be available for a married practitioner.

Applications, giving particulars of age, qualifications and experience with relevant dates, together with the names and *addresses of 3 referees, should be sent to the Secretary, Registrars* Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, London, W.1, not later than 9th October, 1954.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Whole-time REGISTRAR in Anæsthetics to fill a vacancy in *the approved trainee establishment at the South-East Kent* Group of hospitals. The post is recognised for the F.F.A.R.C.S. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications and experience with relevant dates, together with the names and *addresses of 2 referees, to be sent to the Secretary, Registrars* Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, London, W.1, not later than 9th October, 1954.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Whole-time REGISTRAR PHYSICIAN for the Geriatric Services in the Orpington and Sevenoaks and Bromley Groups of hospitals. The Geriatric Unit at Orpington Hospital (which includes a long-stay annexe) has 300 Beds and offers excellent clinical experience in the diagnosis and treatment of acute and chronic *geriatric cases and affords good opportunity for candidates* studying for their membership. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications and experience with relevant dates, together with the names and *addresses of 2 referees, to be sent to the Secretary, Registrars* Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, London, W.1, not later than 9th October, 1954.

ST. ALBANS CITY HOSPITAL, St. Albans, Hertfordshire. (382 Beds.) HOUSE PHYSICIAN (House Officer grade) required at the above Hospital. Post vacant approximately *29th October, 1954, and tenable for 6 months. Duties mainly in* the Paediatric Department. Preference given to candidates seeking pre-registration posts under the Medical Act, 1950.

Applications to Group Secretary, Mid Herts Group Hospital Management Committee, Bleak House, Catherine-street, St. Albans.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER (general surgery) required. Hospital recognised for F.R.C.S. examination, and post *recognised for experience during the pre-registration period.*

Apply, with copy testimonials, stating age, nationality and full details of previous service, to the Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. *Applications invited for SENIOR HOUSE* OFFICER (orthopædics). Post recognised for F.R.C.S.

Apply, stating age and nationality, together with details of previous service, to the Group Secretary, Stoke-on-Trent Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. *HOUSE* OFFICER (general surgery) required, vacant mid-October. Hospital recognised for F.R.C.S. examination, and the post is *recognised for experience during the pre-registration period.*

Apply with copy testimonials, stating age, nationality and full details of previous service to the Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. Applications invited for RESIDENT ASSISTANT CLINICAL PATHOLOGIST to the Stoke-on-Trent Group of *hospitals, vacant 5th October, 1954.* Single accommodation available at the North Staffs Royal Infirmary. The post is of Junior Hospital Medical Officer status, but applications from practitioners with less than the required 2 years qualification *period will be considered, in the grade of Senior House Officer.* The post offers exceptional experience in hospital laboratory work and the laboratory is recognised for the Diploma in Clinical Pathology and also for the Diploma in Pathology.

Applications, stating age, nationality and full details of previous appointments held, together with copies of 3 recent testimonials, to the Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent, as soon as possible.

SOUTHAMPTON EYE HOSPITAL. (32 Beds. Recognised for the D.O.M.S.) RESIDENT SENIOR HOUSE OFFICER required from mid-September, 1954. Salary £745 p.a.

Applications, with copies of testimonials, should be forwarded as soon as possible to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

STOCKPORT INFIRMARY, Stockport. (162 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (Resident Surgical Officer). The post is recognised for the F.R.C.S.

Applications, stating age, experience and qualifications, together with copies of 2 testimonials, to be addressed to the Secretary, Stockport and Buxton Hospital Management Committee, 59B, Shaw-heath, Stockport, Cheshire.

STOCKPORT. STEPPING HILL HOSPITAL. (490 Beds.) Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER (surgery). The post is recognised for the F.R.C.S.

Applications, stating age, experience and qualifications, together with copies of 2 testimonials, to be addressed to the *Secretary, Stockport and Buxton Hospital Management* Committee, 59B, Shaw-heath, Stockport, Cheshire, immediately.

TREDEGAR, MONMOUTHSHIRE. ST. JAMES HOSPITAL. (162 Beds for acute medical, geriatric, obstetrics—24 miles from Cardiff and 6 Vale of Usk.) RHYMNEY AND SIRHOWY VALLEYS HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN (pre-registration if suitable candidate available). *Busy pathology with group blood bank. Salary £425–£525,* according to experience, less appropriate deduction for married quarters (if required).

Apply with full particulars to Group Secretary, Hospital Management Committee, St. Martins-road, Caerphilly, near Cardiff.

WOKING AND CHERTSEY HOSPITAL MANAGEMENT COMMITTEE. *ST. PETER'S HOSPITAL, WOKING AND CHERTSEY* GROUP (404 Beds); ROYAL SURREY COUNTY HOSPITAL, GUILDFORD GROUP (229 Beds). Full-time E.N.T. REGISTRAR required for above and other hospitals in Groups concerned. Recognised for F.R.C.S. and D.L.O.

Application forms can be obtained from, and should be returned by 11th October, 1954, to, Secretary, Woking and Chertsey *Hospital Management Committee,* "Huntington," Chertsey, Surrey. The hospitals may be visited by arrangement. (Tel. Nos.: St. Peter's, Ottershaw 431; Royal Surrey County, Guildford 2323).

WOKINGHAM. PINEWOOD HOSPITAL. Windsor GROUP HOSPITAL MANAGEMENT COMMITTEE. REGISTRAR in Diseases of the Chest required at above Hospital. Hospital has 248 Beds and contains a Thoracic Surgical Unit. Post gives valuable experience in medical and surgical treatment of pulmonary tuberculosis and is suitable for a candidate working *for higher qualifications. Unfurnished bungalow available in* hospital grounds for married candidate; otherwise residential accommodation available in Hospital. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Group Secretary, Alma-road, Windsor, by 10th October.

WREXHAM. MAELOR GENERAL HOSPITAL. (591 Beds.) *Applications are invited for the post of HOUSE* SURGEON at the above Hospital. The appointment is recognised for the Diploma of F.R.C.S. (Eng. and Edin.).

Applications, stating age, nationality, qualifications and experience, together with copies of 2 recent testimonials, should be addressed to the Group Secretary, Maelor General Hospital, Wrexham, as soon as possible.

WIGAN. ROYAL ALBERT EDWARD INFIRMARY. (200 Beds.) SENIOR HOUSE OFFICER in Orthopædic Surgery required. Post now vacant.

Applications to Secretary, Wigan Infirmary.

WIGAN AND LEIGH HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER in General Surgery required for duty at Billinge Hospital, Orrell, near Wigan (370 Beds), vacant in October.

Applications, with names of 2 referees, to Secretary, Knowsley House, Wigan.

WIGAN AND LEIGH HOSPITAL MANAGEMENT COMMITTEE. E.N.T. REGISTRAR (*resident or non-resident*) *with main duties at Wigan Infirmary.* Recognised D.L.O. Now vacant. Married quarters are available.

Applications to Secretary, Wigan Infirmary.

WARRINGTON INFIRMARY. Applications are invited from qualified practitioners for the vacancy of RESIDENT ANÆSTHETIST (Senior House Officer grade), Male or Female, at the *Warrington Infirmary. The Infirmary is recognised for the* D.A. examination. Scale of salary £745 p.a., less £130 p.a. for residential emoluments.

Applications to—

H. L. Boot, Group Secretary,
Warrington and District Hospital Management Committee,
c/o General Hospital, Warrington, Lancs.

WARWICK (*near*). CENTRAL MENTAL HOSPITAL. JUNIOR HOSPITAL MEDICAL OFFICER required in this mental Hospital of 1400 Beds with neurosis unit, adult and child psychiatry clinics recognised for the *D.P.M., and departments* of electro-encephalography, occupational therapy, psychology and social work. Salary £775–£50–£1075 p.a. A modern house is available.

Applications, together with the names and addresses of 3 referees, to the Medical Superintendent within 14 days of the appearance of this advertisement.

WELSH REGIONAL HOSPITAL BOARD. Registrar (general medicine), Caernarvon and Anglesey General Hospital, Bangor (non-resident). Subject to review end of first year.

Application forms from Senior Administrative *Medical Officer, Temple of Peace, Cathays Park Cardiff*, within 14 days.

WEST FIFE HOSPITALS BOARD OF MANAGEMENT. Applications are invited from *suitably qualified medical practitioners*, for the post of REGISTRAR at Glenlomond Hospital, by Kinross (140 Beds—Respiratory and non-respiratory tuberculosis). The post is superannuable under the National Health Service *superannuation regulations.* Salary and conditions of service in accordance with national agreements.

Applications, giving full details of previous experience, should be lodged with the Physician-Superintendent, *Glenlomond Hospital, by Kinross.*

YORKSHIRE. EAST RIDING HOSPITAL MANAGEMENT COMMITTEE.

***Westwood Hospital*, Beverley, Yorks** (229 Beds)

(*a*) SENIOR HOUSE PHYSICIAN, vacant end October.

(*b*) ASSISTANT PATHOLOGIST (Senior House Officer) required in Area *Laboratory, with attendance* Branch Laboratory at Driffield. Offers experience all branches pathology.

East Riding General Hospital, Driffield, Yorks (269 Beds)

(*c*) *HOUSE SURGEON* (first, second or third post), vacant now. Approved pre-registration post. Recognised for F.R.C.S. General surgical duties.

(*d*) HOUSE PHYSICIAN (*first, second, or third post*), vacant 1st November. Approved pre-registration post. Duties include acute and chronic sick and casualties. Good experience for first house appointment.

***Northfield Sanatorium*, Driffield, Yorks** (78 Beds)

(*e*) SENIOR HOUSE PHYSICIAN, vacant now. Offers experience all branches tuberculosis within Group, including surgery, M.M.R. and clinics. *Time for study. Ex-patients* welcome.

Broadgate (Mental) Hospital, Beverley, Yorks (650 Beds)

(*f*) *SENIOR HOUSE PHYSICIAN*, vacant now.

(*g*) HOUSE PHYSICIAN (first, second, or third post), vacant now.

Salary for (*c*), (*d*) and (*g*) is £425–£525 ; and for (*a*), (*b*), (*e*) and (*f*) £745. Fully qualified practitioners may apply for the pre-registration posts.

Detailed applications to Group Secretary, Westwood Hospital Beverley, Yorkshire.

NORTHERN IRELAND HOSPITALS AUTHORITY. Applications are invited for a post as REGISTRAR in Dental Surgery at hospitals managed by the Belfast Hospital Management Committee. The appointment will be on a part-time basis of 5 half-days of duty weekly and the terms and conditions will be *in accordance with the application of the* Spens Report to Northern Ireland.

Applications to be made on a form obtainable (with further particulars) from the Secretary, Northern Ireland *Hospitals Authority*, 44–46, Queen-street, Belfast, and to be returned not later than 28th October, 1954.

CHANNEL ISLANDS, JERSEY. *GENERAL HOSPITAL.* Applications are invited for the post of RESIDENT SURGICAL OFFICER at the above Hospital. Previous experience is essential. The Hospital has 200 Beds and is recognised as a *training hospital for the F.R.C.S.* The post is vacant now. The appointment is for 6 months in the first instance, but is renewable for a further 6 months. Salary £850 p.a., less £125 for residential emoluments.

Applications to be submitted not later than 9th October, 1954, to the President, Public Health Committee, General Hospital, Jersey, C.I.

NEW YORK. NEW ROCHELLE HOSPITAL, New ROCHELLE, NEW YORK, U.S.A. (360-Bed general community hospital.) Approved by the Joint Commission on Accreditation of Hospitals. *Also approved by the* American College of Surgeons and American Medical Association for internship and residency training. Only graduates from approved university schools accepted. 2 INTERNSHIPS *available for the term commencing* 1st January, 1955. Stipend is $200 per month, plus complete maintenance. Passage back to England paid by Hospital after completion of 12-month internship.

Apply Superintendent.

MICHIGAN, U.S.A. OAKWOOD HOSPITAL, Dearborn, *MICHIGAN.* *Applications are invited for 1 or 2-year* General Practice RESIDENCY in new 230-Bed general hospital 10 miles from Detroit. Excellent facilities. Hospital approved for exchange-visitor programme. *Salary begins at $275 per month.*

Apply : Director.

Public Appointments

ROYAL ARMY MEDICAL CORPS. For new conditions and terms of service see page 33.

BAHRAIN, PERSIAN GULF. GOVERNMENT OF *BAHRAIN MEDICAL DEPARTMENT invites applications* from British Male Doctors for the post of MEDICAL OFFICER. Age 28–33. Minimum salary £1494, *rising £45 annually*, no allowances. Non-contributory gratuity on retirement. Private practice among Europeans only. No income-tax. Free quarters with hard furniture and car. Agreement for 2 years, renewable, with 5 *months* home leave on full pay, and free air passages every 2 years.

Applications should be addressed to Messrs. CHAS. KENDALL & PARTNERS LTD., 7, Albert-court, Kensington Gore, London, S.W.7.

CHELMSFORD BOROUGH COUNCIL : ESSEX COUNTY COUNCIL. BOROUGH MEDICAL OFFICER OF HEALTH, AREA MEDICAL OFFICER AND DIVISIONAL SCHOOL MEDICAL OFFICER, *Mid-Essex Health Area* and Division for Education. Applications are invited for the above-mentioned posts, which together constitute whole-time ; 2/11ths of time being devoted to duties as Borough Medical Officer of *Health and 9/11ths to County Council duties.* Candidates must not only be duly qualified as required by the Local Government Act, 1933, but must also possess administrative and organising ability and a wide knowledge and experience of Public and *School Health Services.*

Remuneration (in accordance with appropriate Industrial Court awards) as follows :—

(*a*) Borough Council salary—£281 16s. 4d.–£9 1s. 10d.–£318 3s. 8d. a year.

(*b*) County Council salary—£1122 14s. 8d.–£43 3s. 7d.–£1468 3s. 8d. a year.

Whitley Medical Council conditions of service will apply and also the relevant Standing Orders of the 2 employing Councils. The appointments are subject to medical examination and carry superannuation rights.

Application forms, obtainable from and, when completed, returnable to, the Clerk of the Essex County Council, County Hall, Chelmsford, not later than 16th October, 1954. Canvassing, *directly or indirectly, will be a disqualification.*

17th September, 1954.

DURHAM. ADMINISTRATIVE COUNTY OF DURHAM; URBAN DISTRICTS OF CROOK AND WILLINGTON AND TOW LAW; RURAL DISTRICT OF WEARDALE. Applications are invited from duly qualified medical practitioners holding a Degree or Diploma in Sanitary Science, Public Health, or State Medicine, for the *separate appointments of ASSISTANT COUNTY MEDICAL* OFFICER for the No. 6 (Crook) Area and MEDICAL OFFICER OF HEALTH for the Urban Districts of Crook and Willington, and Tow Law, and the Rural District *of Weardale. The* total salary payable will be £1248 0s. 2d., rising by annual increments of £53 8s. 2d. (4) and £29 16s. 7d. (3) to £1551 2s. 8d. p.a. A car allowance will be payable and if necessary housing *accommodation will be provided. Canvassing directly or* indirectly will disqualify and applicants must disclose in writing whether they are related to any member or senior officer of the employing authorities. Further particulars of the appointment *may be obtained from the undersigned.*

Applications, stating age, qualifications, and experience, and giving the names of 3 persons to whom reference may be made, should be sent to the *undersigned not later than 11th October*, 1954. J. K. HOPE, Clerk of the County Council.

Shire Hall, Durham, 14th September, 1954.

SECOND ADVERTISEMENT

EAST SUFFOLK COUNTY COUNCIL. Applications are invited for appointment of ASSISTANT COUNTY MEDICAL OFFICER (29/44ths) AND MEDICAL OFFICER OF HEALTH (15/44ths) for the Borough of Beccles, the Bungay, Halesworth and Leiston Urban District, and the Blyth and Wainford Rural Districts (total population approximately 43,000). Salary, based on awards 2285, 2321 and 2452, *will be between the* minimum £1235 and the maximum £1564 p.a., rising to maximum by appropriate increments in accordance with the awards. Duties will include school medical inspection, maternity and *child welfare work and general public health.* D.P.H. essential and previous local authority experience an advantage. Superannuable appointment subject to satisfactory medical examination and to provisions of *Sanitary Officers (Outside London)* Regulations, 1935. Car allowance on approved national scale.

Forms of application and further information obtainable from the County Medical Officer, County Hall, Ipswich, to whom *all applications should be returned not later than 16th October*, 1954. G. C. LIGHTFOOT, Clerk of the County Council.

FACTORY DOCTORS. Factories Acts, 1937 and 1948. *The following appointments as Appointed Factory Doctor* are vacant. Apply to Chief Inspector of Factories, 8, St. James's-square, London, S.W.1.

District	*County*	*Latest date for receipt of applications*
KING'S LYNN ..	NORFOLK ..	9TH OCTOBER, 1954
TOTTENHAM ..	MIDDLESEX ..	9TH OCTOBER, 1954

LANCASHIRE COUNTY COUNCIL. Registered medical practitioners required for appointment of ASSISTANT DIVISIONAL MEDICAL OFFICERS in areas adjacent to Bolton and Oldham. Possession of D.P.H. desirable. Salary £950–£1300 p.a. Travelling and subsistence allowances where applicable. Posts superannuable and subject to a medical examination.

Application forms and further particulars from County Medical Officer of Health, East Cliff County Offices, Preston.

FEDERATION OF RHODESIA AND NYASALAND. MINISTRY OF HEALTH. Applications are invited for the following vacancies from suitably qualified Male doctors, who must be British subjects, or citizens of Eire.

PATHOLOGIST (upper age limit 42) :

The salary will be at a fixed rate of £2250 p.a. Private practice is not permitted but consultant practice is allowed to Pathologists called into consultation by private medical practitioners.

GOVERNMENT MEDICAL OFFICERS :

Government Medical Officers are essentially general duty officers and have opportunities in practically all fields of medicine. Though applicants up to 35 will be considered, these posts, which involve considerable change of stations and relieving duties during the first years of service, are best suited to young doctors who have completed 1–5 years of post-qualification experience and who are single, or married without children. Starting salary scale £1100–£1800, actual starting-point (maximum £1300 p.a.) depending on experience. In addition, private practice is permitted, or an allowance of £200 p.a. is paid in lieu.

Application forms and further details (mention post) from Secretary, Rhodesia House, 429, Strand, London, W.C.2. Completed forms to be returned by 16th October.

LONDON COUNTY COUNCIL. Joint Medical Officer (London County Council) and DEPUTY MEDICAL OFFICER OF HEALTH (Hampstead Metropolitan Borough Council). Applications invited from Male registered medical practitioners with D.P.H. for appointment as whole-time Medical Officer in London County Council, Public Health Department. Person appointed will act for about 4/11ths of his time as Deputy Medical Officer of Health in Metropolitan Borough of Hampstead, the Borough Council being associated in making appointment. Duties will, therefore, comprise work in both personal and environmental health services. Salary for joint appointment calculated in accordance with Industrial Court Award 2321, £1140–£1485 (starting-point dependent on local government experience).

Application form obtainable from Medical Officer of Health (PH/D1), County Hall, Westminster Bridge, S.E.1, to be returned by 14th October, 1954 (1239).

NORTHUMBERLAND COUNTY COUNCIL. Applications are invited for the post of SCHOOL MEDICAL OFFICER. The salary will be £950–£50–£1300 p.a. Previous experience may be taken into consideration in determining the commencing salary. Travelling expenses and subsistence allowances in accordance with the Council's scale will be paid. The post is superannuable and the successful candidate will be required to pass a medical examination.

Forms of application obtainable from the Principal School Medical Officer, County Hall, Newcastle upon Tyne, 1. Closing date 9th October, 1954. E. P. HARVEY, Clerk of the Council.

County Hall, Newcastle upon Tyne, 1.

NORTHUMBERLAND COUNTY COUNCIL. Applications are invited from registered medical practitioners for the appointments of 2 ASSISTANT COUNTY MEDICAL OFFICERS to undertake duties primarily connected with maternal and child welfare. Salary will be in accordance with the scale of £950, rising by annual increments of £50 to £1300 p.a. Previous experience may be taken into consideration in determining the commencing salary. Travelling and subsistence allowances when applicable will be paid in accordance with the Council's scale. The appointment is subject to superannuation and will be determinable by 3 months notice on either side. The successful candidate will be required to pass a medical examination.

Forms of application and any further particulars required may be obtained from the undersigned and must be returned not later than 4th October, 1954.

JOHN B. TILLEY, County Medical Officer.

County Hall, Newcastle upon Tyne 1.

READING. COUNTY BOROUGH OF READING. Applications are invited from duly registered medical practitioners for the post of ASSISTANT MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER (Male). Applicants must possess a D.P.H. or equivalent qualification. The duties will be mainly in connection with the Maternity and Child Welfare Service and the School Health Service, but the person appointed will be expected to carry out such other duties as may be allocated to him by the Medical Officer of Health. There is opportunity for experience in the clinical departments of the local hospitals. The salary will be on an appropriate step of the scale—£950–£50–£1300 p.a., according to experience and qualifications.

Further particulars can be obtained from the Medical Officer of Health, Town Hall, Reading, to whom forms of application should be returned not later than 9th October, 1954.

G. F. DARLOW, Town Clerk.

SHEFFIELD. CITY OF SHEFFIELD. Public Health DEPARTMENT. Applications are invited for the appointment of DEPUTY MEDICAL OFFICER OF HEALTH at a salary of £1600, rising by annual increments of £100 to a maximum of £1900. Applicants must be registered medical practitioners, holding the Diploma in Public Health, with experience in the administration of the Public Health Services. The appointment is superannuable, and the person appointed will be required to pass a medical examination and to devote the whole of his time to the service of the Council.

Applications (which must be made on a form to be obtained from me) containing the names of 3 persons to whom reference may be made, must be received by me, not later than 4th October, 1954, endorsed "Deputy Medical Officer of Health." Canvassing, whether direct or indirect, is prohibited and will be a disqualification.

Further information can be obtained from Dr. Llywelyn Roberts, Medical Officer of Health, P.O. Box 78, Town Hall Chambers, Sheffield, 1.

Town Hall, Sheffield, 1. JOHN HEYS, Town Clerk.

PRISON AND BORSTAL SERVICE. Occupational THERAPIST (in sole charge). Applications are invited for a post in the above Service at H.M. Prison, Wakefield. Salary £455–£15–£515 p.a. (National Health Service scale). Pensionable under the Health Services superannuation scheme. Applicants must hold the Diploma of the Association of Occupational Therapists or a qualification approved by the Scottish Association of Occupational Therapists.

Regulations and application forms from Establishment Officer (E.84/2/12), Prison Commission, Horseferry House, Dean Ryle-street, London, S.W.1, to be returned by 11th October, 1954.

ROYAL NEW ZEALAND NAVY. Applications are invited for service as MEDICAL OFFICERS in the Royal New Zealand Navy. Candidates must be of British birth and parentage, and registered under the Medical Acts and medically fit, and have completed National Service. Entry for 4 years Short-service Commission. Pay and allowances : as governed by R.N.Z.N. regulations.

On entry for first 2 years at rate of £1148 p.a.

For third and fourth years £1206 p.a.

Married Officers : marriage allowance 3s. 6d. per day ; separation allowance 3s. 6d. per day ; uniform outfit grant £140 (payable on entry).

Free passage to New Zealand granted to successful applicant, and family if married.

Full details from Royal New Zealand Navy Headquarters (Medical Officers), The Adelphi, John Adam-street, London, W.C.2.

WESTMINSTER CITY COUNCIL AND HOLBORN BOROUGH COUNCIL. Joint appointment of PRINCIPAL ASSISTANT MEDICAL OFFICER OF HEALTH (permanent superannuable post). Salary £1250–£50–£1400 p.a. Applicants to be registered medical practitioners and to hold a registered public health qualification ; age not to exceed 45 years. The person appointed will act as Principal Assistant Medical Officer of Health for the 2 Boroughs. His services will be allocated in the proportion of three-fourths to Westminster and one-fourth to Holborn.

Further particulars from and applications (marked " Principal Assistant Medical Officer of Health," stating age, war service, qualifications, present and past appointments, with copies of 3 recent testimonials) to the Town Clerk, Westminster City Hall, Charing Cross-road, W.C.2, by 12th October, 1954.

General Practice

For an Executive Council post (England and Wales) apply on form E.C.16A obtainable from the council. Mark envelope "Vacancy"

SOUTH HARROW. Applications invited for Vacancy. List at present approximately 2250. Designated area. Residence and surgery may be available. Apply on E.C.16A before 2nd October, 1954, to—

F. J. ASHFORD, Esq., Middlesex Executive Council.

Gloucester House, Gloucester-gate, London, N.W.1.

Miscellaneous

To non-professional posts the Notification of Vacancies Order 1952 applies.

Medical Officer required for Middle East by large oil company ; preference for those with overseas experience and some knowledge of tropical work. Age about 35 and preferably single. Emoluments total over £1800 p.a. ; paid home leave after 2 years ; pension fund.—Write, quoting No. 379 to BOX No. 7956, c/o CHARLES BARKER & SONS LTD., 31, Budge-row, London, E.C.4.

The Research Department of the Pharmaceuticals Division of Imperial Chemical Industries Ltd. invites application from young medical men for the position of Histopathologist. An interest in histochemical research will be regarded as an asset. Salary according to experience.—Applications should be addressed to the Research Director, I.C.I. Ltd., Pharmaceuticals Division, Hexagon House, Blackley, Manchester. Suitable applicants will be interviewed during the month of December.

Required Registered Medical Practitioner for Medical Department of large pharmaceutical company. The work will include abstracting, dealing with medical queries, and general professional assistance. Salary according to qualifications and experience, minimum £1200 p.a.—Apply : Address, No. 967, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

South Australia. General Practice for sale. Sheep grazing country and small railway town 140 miles north of Adelaide. Gross receipts £A3241. Goodwill £A2500. House and surgery £A1800. 12-bed hospital with theatre and X-ray equipment. Opportunity for man interested in surgery. Terms considered. Sale required by December, 1954.—Reply air mail, Dr. PUGH, Terowie.

Hand-picked Secretaries, S.R.N. and otherwise.—Wigmore AGENCY FOR MEDICAL SECRETARIES, 67, Wigmore-street, W.1 (HUNter 9951/2/3).

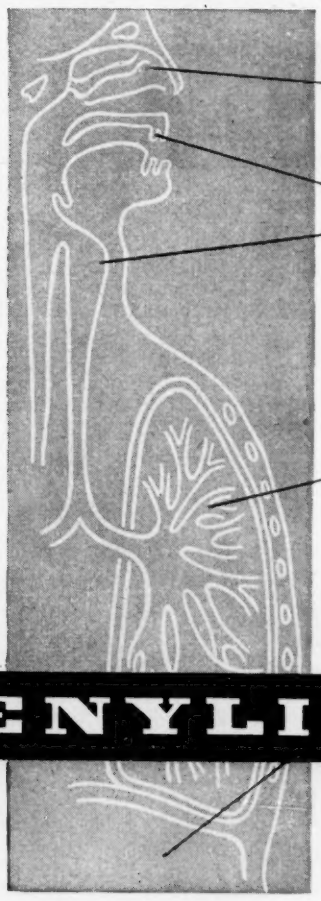
" Pregnancy Diagnosis by the Xenopus Method," 24-hour service. Send specimen of urine and £1 1s. fee. Hæmatology, Biochemistry. Flame Photometry.—WELBECK BIOLOGICAL LABORATORIES, 26, Park-crescent, Portland-place, W.1 (MUSeum 5386–7).

Applicants for posts requiring testimonials copied or duplicated should communicate with MANTON SECRETARIAL SERVICE, LTD., 98, Victoria-street, S.W.1 (Phone : VICtoria 0141), who are specialists in this kind of work.

Bind your medical journals for permanent and ready reference. Particulars and prices from—DUNN & WILSON, LTD., Falkirk, Scotland. Specialist binders to university and technical libraries.

Portable Boyle Apparatus, MS105, for Sale. Purchased November, 1953, excellent condition. Offers.—Address, No. 968, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

PUBLISHED by the PROPRIETORS, THE LANCET LIMITED, 7, Adam Street, Adelphi, in the County of London.
Printed by HAZELL, WATSON & VINEY, LTD., London and Aylesbury—Saturday, September 25, 1954.
PRINTED IN GREAT BRITAIN—Entered as Second Class at the New York, U.S.A., Office.



BENYLIN *expectorant*

FOR RELIEF OF COUGH AND RESPIRATORY CONGESTION

® *Trade Mark*

Benylin® Expectorant offers prompt relief from the irritation of bronchitis and other respiratory complaints.

Unbeneficial cough is rendered more productive and becomes less frequent and severe. Nasal stuffiness, sneezing, and bronchial congestion are quickly alleviated.

Benylin Expectorant is non-narcotic and may be prescribed confidently for children as well as adults. A mildly tart, raspberry-flavoured syrup, it is readily acceptable to patients of all ages.

Supplied in bottles of 4, 16 and 80 fl. ounces.

MEDICAMENTA VERA

PARKE, DAVIS & COMPANY, LIMITED (Inc. U.S.A.) · **HOUNSLOW** · **MIDDX.** · Tel: **Hounslow 2361**

233

Butazolidin Regd.

In view of the increasing usage of Butazolidin it is considered once again necessary to draw the attention of doctors to the known contra-indications to the drug.

These are :—

- **Cardiac damage**
- **Hypertension**
- **Renal damage**
- **Hepatic damage**
- **History of dyspepsia or peptic ulceration**
- **Drug allergy**
- **History of blood dyscrasia**

Full literature on request.

Geigy

PHARMACEUTICAL LABORATORIES GEIGY LTD.
Rhodes, Middleton, MANCHESTER.

PH.65